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STEWART L. UDALL, SECRETARY

FISH AND WILDLIFE SERVICE
CLARENCE F. PAUTZKE, COMMISSIONER

BUREAU OF COMMERCIAL FISHERIES
DONALD L. MCKERNAN, DIRECTOR

DIVISION OF RESOURCE DEVELOPMENT
RALPH C. BAKER, ASST. DIRECTOR

COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
G. A. Albano and H. Beasley, Assistant Editors

Address correspondence and requests to the: Chief, Fishery Market News Service, U.S. Bureau of Commercial Fisheries, 1815 North Fort Myer Drive, Room 510, Arlington, Va. 22209.

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Compositors: Alma Greene, Donna K. Wallace, and Marjorie McGlone

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A PROGRESS REPORT ON THE DEVELOPMENT OF INTERNATIONAL FOOD STANDARDS

By Charles Butler*

Among the first problems facing any country seeking to engage in international trade is that of agreement with the buyer on the nature, characteristics, quality, quantity, and price of the commodity to be traded. Once agreement is reached on those elements, the negotiation of the other details can proceed in an orderly way and by accepted rules of commerce.

Many countries are actively engaged in the export and import of foods whether they be raw, semiprocessed, or processed. However, that trade is hampered by lack of food standards acceptable to buyer and seller. A number of international organizations had been working on standards for trade between countries. For example, the need for agreement on food standards was first recognized when the Codex Alimentarius Europaeus was established to develop standards for use among European nations. The Organization for Economic Cooperation and Development (OECD), of which the United States is a member, also had a program for food standards development.

Fig. 1 - To assure a top-quality processed product for the consumer, U. S. D. I. (U. S. Department of the Interior) fishery inspector checks quality of raw heads-off shrimp in Texas shrimp breading plant.

Many people felt that the work was being unnecessarily duplicated, too many organizations were engaged in it, and its cost was becoming prohibitive. This situation sparked the adoption of a resolution at the FAO Conference of 1961, endorsing the establishment of a Codex Alimentarius (Food Standards) Commission to operate under joint Food and Agriculture Organization/World Health Organization (FAO/WHO) auspices. The excellent progress made on food additives, milk hygiene, and the Code of Principles for milk and milk products under this same joint auspices was the basis for this further program. In October 1962, there was convened, at Geneva, the First Joint FAO/WHO Conference on Food Standards to review the proposed program. The conference was mainly concerned with the organization of the FAO/WHO Codex Alimentarius Commission. The attendees set the principles, guidelines, purpose, and scope of the Commission.

The first working conference of that Commission, held in Rome June 25-July 3, 1963, resulted in assignment of chairmanships of the various commodity and practices committees to

*Assistant Director for Industrial Research, U. S. Bureau of Commercial Fisheries, Washington, D. C.

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member governments or international organizations. For example, the United States was assigned chairmanships for the committees on food hygiene and processed fruits and vegetables; FAO was given the chairmanship for the committee on fish and fishery products.

The Joint FAO/WHO Program on Food Standards (Codex Alimentarius) has as its purpose: simplifying and integrating food standards work now carried on by many international organizations; providing an effective mechanism for obtaining Government acceptance of those standards; and their publication in the Codex Alimentarius. Participation in the program is open to all interested member nations of FAO and WHO. Primary task of the Commission is the determination of priorities and the allocation of preparatory work on each standard to the best qualified outside technical body. The group so selected would submit a draft to the Commission for finalization at Government level as was so successfully done with the Code of Principles for Milk and Milk Products. Work already under way on food standards, such as that of FAO, would gradually be integrated with the new Joint Program. Basis for the Joint Program is (1) the rapidly growing importance of internationally accepted food standards as a means of protecting consumers and producers in all countries, whatever their stage of development, and of effectively reducing trade barriers; and (2) the need to simplify and integrate international food standards work to avoid duplication and conflicting standards and to effect economies in effort and expense.

Fig. 2 - U. S. D. I. fishery inspectors at packing line of Texas shrimp breading plant.

Types of foods to be included are principal foods entering international trade, whether processed, semiprocessed, or raw, for direct sale to the consumer or for manufacturing purposes. Food additives, intentional or unintentional, are included because of their increasing importance (pesticides, etc.). Primary responsibility for the work on food standards rests with FAO, while WHO is concerned with health aspects of the program. Food hygiene is included because this element is essential to insure a food standard that is both effective and acceptable, based on international food standards work already under way. Food hygiene rules will also be valuable for guidance of developing countries where full knowledge in this area cannot be taken for granted.

Worldwide standards were agreed upon as the desirable type, because some foods are international in trade. There are not excluded standards for foods that are regional or interregional but the Codex, through incorporation of both types, will be a reference book of international food standards and a means for harmonizing the standards themselves.

The nature and type of standards to be included in the Codex is important. "Nature" means the category into which they fall. These are: international "trading" standards; international minimum standards, standards somewhat less rigorous, but a target at which national standards should aim. "Type" is aspect to be covered; composition, designation, labeling, analysis, hygiene, etc.

The Commission recognizes the difficulty of attaining its objectives, even for closely linked countries, but the aim must be attained by any group of countries seeking free interchange of foodstuffs in a common market. The trading standards can be only recommendations for use by any country at its option; or as in EEC, by international legislation they may become law for that group. Less difficult is the recommendation of minimum standards which if a government accepts them, merely undertakes to insure that corresponding national standards shall not be less rigorous. This does not preclude national standards being more rigorous.

A good example of minimum standards appeared in Code of Principles for Milk and Milk Products, now accepted by about 50 countries. Standards for dried milk, elaborated therefrom, are already having international impact on trade in that commodity.

Those food standards are aimed at insuring the marketing of a sound, wholesome product, correctly labeled and presented. Those objectives are most important in international standards. They are not intended to force a certain quality (or grade) of product upon the consumer or otherwise to affect consumer preference.

All standards developed by the Commission would be submitted to governments with a view to their acceptance. This is an essential element since there are detailed and diverse governmental regulations to which every imported food must comply. Harmonization with national standards, therefore, will enhance the weight of the Codex standard as a model.

For fish and fishery products, the Commission delegated to FAO the initial work on both Codes of Principles and Standards. FAO called a meeting of a Committee of Experts which met in Rome, February 18-20, 1964.

The Committee consisted of experts from the following 12 countries actively associated with international trade in fish and fishery products: Canada, Denmark, Federal Republic of Germany, Iceland, Italy, Japan, Netherlands, Norway, Poland, Portugal, United Kingdom, and United States of America, together with observers from France, Poland, the Organization for Economic Cooperation and Development (OECD), and the European Economic Community (EEC). The Committee elected as its Chairman H. V. Dempsey (Canada) and as its Rapporteur C Butler (U. S. A.)

The Committee's substantive agenda was as follows:

(1) Recommendation of priorities among fish and fishery products to be standardized.

(2) Preparation of a code of principles for fish and fishery products.

(3) Preparation of a draft model standard.

In handling this agenda, the Committee had before it a considerable documentation prepared by the FAO Secretariat, containing information on regulations concerning fish and fishery products in the principal countries, on the work of other international agencies (in particular OECD) on a draft skeleton code of principles and, finally, material on international trade in fish and fishery products to facilitate the selection of priorities among them for standardization.

The Committee agreed that, in the selection of products for international standardization, priority should be given to those products:

a. Which are important in international trade.

b. Which are of interest to a number of countries.

c. Where lack of standards have created trade difficulties.

d. For which raw material does not differ too much.

e. For which standardization would not be too difficult technically.

The list of products selected as suitable for international standardization at an early date was:

(a) Canned Products:

Herring and sardine in tomato sauce
Herring and sardine in oils
Tuna, bonito and mackerel in brine or oils
Pacific salmon
Crab meat and shrimp

(b) Frozen Products:

Tuna as raw material for further processing
Herring " " " " " "
Fillets of Atlantic cod, haddock, and ocean perch (Sebastes species)
Pacific salmon
Crustaceans

(c) Cured Products:

Salted herring
Salted cod

Instead of the Code of Principles which it was requested to draw up, the Committee felt that it would be more descriptive to call it a Code of Practice, since what was wanted were broad guidelines for practical application. On the basis of a draft submitted by the Secretariat, the Committee considered in detail the various chapters which should be included and, as a result, drew up the skeleton Code of Practice which is outlined here:

I. HANDLING PRACTICES FOR RAW MATERIAL

1. Requirements for raw fish and fishery products

(a) Handling on board fishing vessels

(i) condition of fish at the time of catching

(ii) immediate handling of fish, including gutting and bleeding

(iii) washing

(iv) stowing and icing

(v) equipment and facilities available on board (boxes, freezing equipment, cold-storage rooms, etc.)

(b) Handling ashore

(i) proper methods of unloading the catch

(ii) re-icing prior to sale as fresh fish

(iii) re-icing prior to processing

(iv) re-icing prior to auction

(v) handling of products frozen at sea

2. Requirements for plants and equipment

(a) sanitation

(b) disinfection

II. PROCESSING PRACTICES

1. Freezing and storage of frozen products
2. Canning
3. Curing (salting, smoking, marinating)

III. PRACTICES OF QUALITY CONTROL

IV. STANDARDS

1. Standards of composition

(a) definition

(b) designation

(c) quality requirements

(d) permitted additions

(e) marking and labeling

2. Methods of sampling, analysis and examination needed for control of each standard

In general, the Committee felt that the Fisheries Division of FAO should be responsible for elaborating the skeleton Code of Practice. However, in order to achieve that task, the Committee felt that specified countries or organizations should be asked to help in the preparation of the Code. The exceptions are as follows:

a. With respect to antimicrobials and other ice additives, the Committee requested the Director-General to request the Codex Alimentarius Expert Committee on Food Additives, under the chairmanship of the Netherlands Government, to look into the whole question of the use of antibiotics in ice for the preservation of fish with a view to determining whether the technological considerations are sufficient to justify the establishment of a tolerance for their use, subject to appropriate toxicological examination by the Standing Joint FAO/WHO Expert Committee on Food Additives.

Fig. 3 - U.S.D.I. fishery inspector in Texas shrimp breading plant checks package of breaded shrimp at weighing station of the production line.

b. With respect to requirements for plants and equipment, the Committee recommended that the questions of sanitation and disinfection be considered by the Codex Alimentarius Expert Committee on Food Hygiene, under the chairmanship of the United States. The Committee, therefore, requested the Director-General to ask the Expert Committee on Food Hygiene to include in its program problems of sanitation and disinfection for fish processing plants.

c. With respect to freezing and storage of frozen products, the Committee felt that the International Institute of Refrigeration (IIR) should be requested to develop that chapter of the Code in collaboration with OECD.

d. With respect to processing practices for canning, the Committee noted the program now in hand with OECD on this subject and felt that OECD should be asked to develop that chapter of the Code.

e. With respect to curing, the Committee felt that this subject should be broken down into the following subdivisions and the development work allocated as indicated:

Process	Country
Salting	Iceland
Smoking	Netherlands
Marinating	Germany

Regarding fermented products, it was agreed that this subject should be referred to the Indo-Pacific Fisheries Council for consideration and the development of a Code if they felt that sufficient material was available for a chapter.

The Committee considered in detail a skeleton model which had been drawn up by the FAO Secretariat for the elaboration of international standards for fish and fishery products. The model standard agreed upon is as follows:

I. STANDARD OF COMPOSITION

(The example taken is that of a canned product).

Definition

The fish shall be defined by the Latin name of the genus and species to which it belongs (Binominal nomenclature), e. g. "canned tuna is the processed flesh of fish of the species listed. . . ."

Designation

Name of product e. g., grated tuna in oil.

Quality requirements

Minimum requirements for content

(a) requirements concerning fish, e. g., appearance, freshness, color, etc.

(b) form of pack, e. g., solid pack, chunks, flakes, grated

Grades

e. g. Fancy Grade or Grade A
Standard Grade Grade B
Commercial Grade

Permitted additions

(a) substances added for other purposes (eventually food additives which will be included in the Codex Permitted List now in preparation).

(b) packing media, e. g., type of oil used, brine, etc.

(c) other ingredients.

Marking and labeling

The outside of packages shall bear the following information clearly described:

(a) designation - e. g. chunks

(b) ingredients

(c) weight or count

(d) origin of finished product - e. g. country, manufacturer, packer, etc.

II. METHODS OF SAMPLING, ANALYSIS AND EXAMINATION NEEDED FOR CONTROL OF THIS STANDARD

(a) examination of cans - e. g. seaming

(b) bacteriological examination - e. g. routine incubation

(c) chemical examination - e. g. salt, fat, acidity

(d) organoleptic examination

(e) sampling

The Committee proposed that the following steps should be followed in drafting standards on this model:

a. A first draft would be prepared by the "author" country or organization proposed in the following table against each standard (if the FAO Secretariat should be unable to make the arrangements suggested with those countries or organizations, the Committee urged it to make such other appropriate arrangements as might be necessary to expedite this work) and sent to the FAO Fisheries Division which would then distribute it for comment to other interested countries.

b. The comments of those countries would then be sent to the FAO Secretariat for consolidation and transmission to the "author" country.

c. The "author" country or organization would then prepare a revised draft in the light of the comments and send it to the FAO Secretariat.

d. The second draft would then be distributed by the Secretariat to interested countries for further comment.

e. This procedure would be continued until substantial agreement had been reached upon the draft.

f. At that stage, the Committee felt that the draft could best be considered by a Codex Alimentarius Expert Committee which the Codex Alimentarius Commission might wish to set up.

g. The draft approved by that Committee of Experts would then be sent to the Codex Alimentarius Commission and thereafter handled by the normal agreed procedures of that Commission.

The countries or organizations which the Committee felt should be invited to undertake the preparation of the preliminary draft of the standards (i. e. "author" countries or organizations) are as follows:

CANNED PRODUCTS	"AUTHOR" COUNTRY
Herring in tomato sauce	OECD
Sardine in tomato sauce	OECD
Herring in oil	OECD
Sardine in oil	OECD
Tuna in brine or oil	Japan
Bonito in brine or oil	Peru

CANNED PRODUCTS (Contd.)	"AUTHOR" COUNTRY (Contd.)
Mackerel in brine or oil	Portugal
Pacific salmon	Canada
Shrimp: (i) Paeneus	U. S. A.
(ii) Crangon	Federal Republic of Germany
FROZEN PRODUCTS	
Frozen tuna as raw material for further processing	Japan
Frozen herring as raw material for further processing	Norway
Frozen fillets of Atlantic cod, haddock, and ocean perch (Sebastes)	United Kingdom
Frozen Pacific salmon	Canada
Frozen crustaceans	France
CURED PRODUCTS	
Salted herring	Netherl nds
Salted cod, etc.	Canada

The Committee requested the Secretariat, when inviting countries or organizations to draft those standards to seek as far as possible "trading" standards. Trading" standards are for purposes of aiding in orderly trade in the commodity as contras ed to consumer-oriented standards. They aim at establishing a norm for the commodity, but do not preclude negotiation for sale of a below-the-norm commodity at a lesser price.

Fig. 4 - U. S. D. I. fishery inspector in a Texas shrimp breading plant checks the grade of breaded shrimp.

The United States Government has supported the Codex Alimentarius Commission from its inception and has taken an active role. In fact, Deputy Commissioner John Harvey of the Food and Drug Administration chaired that Commission's meeting at Geneva in February 1963, and at Rome in June of 1963. Since the United States has a rather comprehensive program of national food standards it is in a position to provide a significant impact for the development of international "trading" standards. Those standards will help the United States in its current program of trade expansion aboard, and they will also provide guidelines for production by developing countries of products acceptable in world trade channels.

The fishing industry should be interested in the program in that it will have a bearing on our export and import business in the future. The procedures described provide ample opportunity for comment on the fishery products standards as they are developed. The acceptance of any standard published by the Codex Alimentarius Commission for use is entirely voluntary and each country can elect to use it or not. However, with these new international tools there is reason to believe the goals set down by the Commission can be reached:

1. Promotion of trade in food.

2. Stimulation of food standards work in developing countries.

3. Protection of the consumer's health.

4. Promotion of fair practices in food trade.

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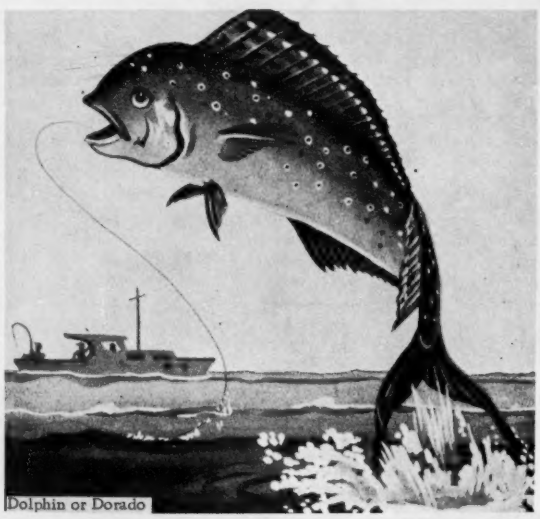
THE TRUE DOLPHIN KNOWN FOR SPEED AND FIGHTING SPIRIT

Two marine species in the waters of the Gulf of Mexico have the same name--dolphin. One is the bottle-nosed mammal sometimes called porpoise. The other is the true dolphin, a beautiful and spectacular game fish.



Dolphin or Dorado

The dolphin, or dorado, is resplendently colored with hues of lilac, sea greens and emerald pastels mingled with purplish golds. Leaping high into the air when snared, this fish displays those colors with each surge. These repeated leaps of 10 to 20 feet are remarkable demonstrations of the dolphin's fighting spirit.

Dolphins are most often caught by trolling slowly in rather deep waters off reefs or in bays. The young occur in shallow waters, but the mature fish usually prefer the open seas. These fish are noted for their very great speed and their streamlined body design. The average size dolphin is about 2 or 3 feet long, and they are said to prey on flyingfish.

Dolphins are also famed for unusual and rapid change of color at death. Their colors may change from yellow to green to blue to violet in a matter of minutes. (Alabama Conservation, December-January 1964.)

TRENDS AND DEVELOPMENTS

Alaska

FOREIGN FISHING ACTIVITIES IN BERING SEA, JUNE 1964:

There was an increase in foreign fishing activity off Alaska during June 1964. By the end of that month, some 400 Soviet and Japanese vessels were fishing in the area.

U.S.S.R.: KING CRAB FISHERY: A tangle-net fishery for king crab was the only major Soviet effort in the eastern Bering Sea during June--an area of intense Soviet fisheries during the winter and early spring periods. The factoryships Pavel Chebotnyagin, Konstantin Sukhanov, and Vasiliy Blyukher, each accompanied by at least two tangle-net setting trawlers, were concentrating on the Continental Shelf north of the Alaska Peninsular from Unimak Pass to near Port Heiden. The limited Soviet fishery for shrimp located northwest of the Pribilof Islands during May 1964 had apparently been abandoned.

TRAWL FISHERY: The major Soviet fishery off Alaska had their trawling fleet fishing primarily for Pacific ocean perch in the Gulf of Alaska. That fishery, which began near Yakutat in March, shifted to the west with the major concentration during June centered on Albatross Bank south of Kodiak Island. About 90 trawlers, 15 freezerships, 3 factoryships, and associated support vessels were included in the Albatross fleet. A smaller Soviet trawling fleet of about 25 trawlers and 4 freezerships was operating on Portlock Bank east of Kodiak. Frequent observations of the catches by the Soviet trawling fleet near Kodiak continue to indicate they were taking large quantities of Pacific ocean perch, with very little incidental catches of other species such as halibut and king crab.

WHALING: In mid-June, the massive whale factoryship Sovetskaya Rossiya, accompanied by at least 11 whale killer vessels, was observed actively engaged in whaling off Cape Spencer in southeast Alaska. The Rossiya was built in 1961, is over 700 feet long, of 32,000 gross tons, and carries a helicopter aboard. It was believed she was returning from the whaling season in the Antarctic, taking additional whales en route to her home port of Vladivostok.

Fig. 1 - Soviet trawler operating in North Pacific and Bering Sea. Vessel under way with all nets aboard.

Japan: SHRIMP FISHERY: The Japanese factoryship Chichibu Maru, with 12 accom-

panying trawlers, which was engaged in a shrimp fishery generally north of the Pribilof Islands throughout the year was reported to have returned to Japan for repairs. She is scheduled to return to the eastern Bering Sea during August. A second shrimp factoryship, the Einin Maru, also with 12 trawlers, was still in the area generally north of the Pribilofs during June.

KING CRAB FISHERY: King crab fishing by the Japanese involving the factoryships Tokei Maru and Tainichi Maru was centered in the area off Port Moller during June. Each of the factoryships was accompanied by 6 trawler-type vessels for handling the tangle nets.

LONG-LINE FISHERY: The Japanese long-line fishery, specifically for halibut in the eastern Bering Sea, apparently was abandoned due to disappointing catches. At last report the Kotoshiro Maru No. 25 with one accompanying long-liner shifted its operations to near the Siberian coast. The factoryship Fuji Maru No. 3 was reported to have returned to Japan. The 5 long-line fishing vessels accompanying the Fuji Maru No. 3 were to be assigned to the Seifu Maru fleet.

Fig. 2 - Cleaning and packing compartment aboard a Japanese factoryship.

FISH-MEAL FISHERY: A total of 4 Japanese fish-meal and oil producing fleets were operating in the eastern Bering Sea during June. The factoryships Hoyo Maru and Gyokuei Maru, with 30 trawlers assigned to each, were operating on the "flats" of outer Bristol Bay from Unimak Pass to the area east of the Pribilof Islands. The factoryship Tenyo Maru with 28 trawlers was joined by another fish-meal and oil fleet of the factoryship Soyo Maru, also with 28 trawlers. Throughout most of June those 2 fleets have operated in the general vicinity of Unimak Pass on the Bering Sea side. The factoryship Seifu Maru licensed with 28 trawler vessels also appeared near Unimak Pass in late May. Officials aboard the Seifu told members of a United States boarding party that their catches had been poor and that they were moving to the Siberian coast. The shift to other waters apparently had been made as the Seifu fleet was not sighted in the eastern Bering Sea during June.

WHALING: Whaling operations were conducted by 3 Japanese fleets near Alaska during June. The factoryship Kyokuyo Maru was believed to be operating near Amchitka Pass in the mid-Aleutians with another fleet, possibly the Nitto Maru, further eastward near Amukta Pass, west of Umnak Island. A whale killer, which in 1963 was assigned to the Kinjo Maru fleet, was sighted several times during June off southeast Alaska in the region generally west of Baranof Island.

EXPLORATORY FISHING: The Japanese trawlers Taiyo Maru No. 81 and Tenryu Maru "exploratory" fishing in the Gulf of Alaska during the month were joined by 2 others, the factory stern trawler Akebono Maru No. 51 and the smaller side trawler Kohoku Maru No. 2. Those 4 of 6 such vessels to engage in Gulf of Alaska "exploratory" fishing were concentrated in the area east of the Trinity Islands, southwest of Kodiak. The factory trawlers Akebono No. 51 and Taiyo No. 81 were reported seeking Pacific ocean perch primarily, while the side trawlers Tenryu and Kohoku No. 2 were mainly looking for shrimp.

* * * * *

KODIAK FIRM PROCESSES DUNGENESS CRAB:

It was reported that a cold-storage plant in Kodiak would employ from 40 to 50 women to help process Dungeness crab at that plant. During June, 12 women were working at the shaking tables. The firm has been shipping large quantities of fresh cooked Dungeness crab meat to other states where the supply is limited.

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SOUTHEASTERN ALASKA SALMON PURSE-SEINE SEASON OPENED JULY 1:

The Alaska Department of Fish and Game announced in June that Districts 4, 12, and 14 were to be open for purse seining on July 1

for two days' fishing beginning at 6:00 a. m., July 1, and ending at 6:00 p. m., July 2. Test fishing had indicated that southeastern Alaska may have one of the best chum salmon seasons in recent years. Chum were the dominant species in almost all of the test fishing areas from Ketchikan to Icy Strait.

* * * * *

HALIBUT PRICES RISE IN JUNE:

Halibut ex-vessel prices continued to rise in June at Ketchikan. Late ex-vessel sales were as high as 24.5 cents a pound for medium and large fish, and 12 cents for chicken halibut.

* * * * *

PINK SALMON OFF SOUTHEAST ALASKA COAST:

High-seas fishing and tagging by Canadian and United States vessels indicated that a large concentration of pink salmon were lying off the coast of southeastern Alaska on June 10. Whether those fish were bound for southeastern Alaska or points farther south was not known at the time.

* * * * *

BUTTER CLAM DIGGING FEASIBLE DESPITE EARTHQUAKE:

A 2-week survey of the effect of the March 27 earthquake on shellfish resources showed in part that in spite of the beds subsiding 4 feet and a substantial reduction of exposed clam beach, commercial digging for butter clams was still feasible in Kasitsna Bay. Indications were that there was little harmful effects generally upon king crab, Dungeness crab, or shrimp. Although some crab pots for both species were lost because of siltation, razor clam beds on the Kenai Peninsula and the Alaska Peninsula did not seem to be severely damaged. The amount of loss of razor clam beaches on the Copper River flats caused by a 6-foot rise in land elevation had not yet been accurately determined, but it was not expected to be of major proportions.

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DUNGENESS CRAB REPORTED PLENTIFUL OFF CAPE FAIRWEATHER:

A fishery firm in Douglas sent 5 vessels to the Cape Fairweather area during June. Heavy catches of large Dungeness crab were taken throughout the month. It was reported that by the end of the month, 200,000 pounds of "prime" crab had been produced from that area. One vessel reportedly landed over 50,000 pounds.

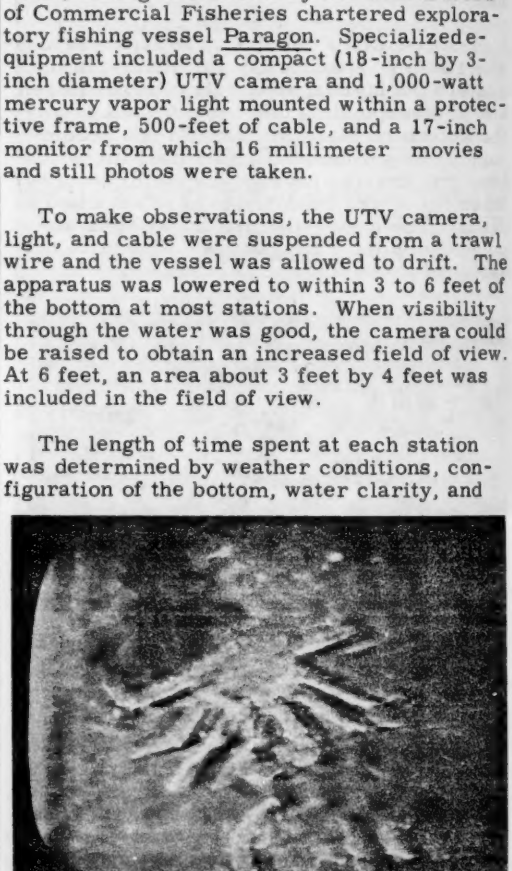
Alaska Exploratory Fishery Program

UNDERWATER TELEVISION USED FOR LOCATING KING CRAB:

M/V "Paragon" Cruise 64-1 (May 25-June 15, 1964): Underwater television (UTV) equipment was tested as a method for locating concentrations of king crab off Kodiak Island, Alaska, during this cruise by the U. S. Bureau of Commercial Fisheries chartered exploratory fishing vessel Paragon. Specialized equipment included a compact (18-inch by 3-inch diameter) UTV camera and 1,000-watt mercury vapor light mounted within a protective frame, 500-feet of cable, and a 17-inch monitor from which 16 millimeter movies and still photos were taken.

To make observations, the UTV camera, light, and cable were suspended from a trawl wire and the vessel was allowed to drift. The apparatus was lowered to within 3 to 6 feet of the bottom at most stations. When visibility through the water was good, the camera could be raised to obtain an increased field of view. At 6 feet, an area about 3 feet by 4 feet was included in the field of view.

The length of time spent at each station was determined by weather conditions, configuration of the bottom, water clarity, and



Adult king crab as viewed on shipboard television monitor during M/V Paragon Cruise 64-1 (May 25-June 15, 1964).

number of crabs seen. At some locations, up to 3 hours were spent viewing the bottom. Although the speed of drift varied because of tide and wind conditions, distances up to one mile were surveyed between the starting and ending points of individual stations.

A variety of stations were observed with bottom types ranging from mud to large boulders in depths from 4 to 60 fathoms. During investigations at 44 individual locations adjacent to Afognak, Raspberry, and Kodiak Islands, significant quantities of king crab were observed at only 2 stations. On June 4, in Raspberry Straits, numerous king crab were observed at depths of 8 to 10 fathoms. An estimated concentration of 50 adult crabs was seen on the screen at one time. Off Uganik Cape, Kodiak Island, a concentration of adult king crab was observed in 18 fathoms. One group of at least 50 closely-packed individuals was seen as were lesser aggregations. An estimated total of 200 king crab was seen at that station.

At least one crab was seen at most of the other stations and as many as 30 to 40 scattered crabs were viewed at a station in the Alitak Bay area.

Dungeness crab, shrimp, cod, flatfish and other marine life were observed frequently during the experiments. Plankton and suspended matter in the water limited the effective field of view. Conditions during other seasons with plankton less abundant would enhance the potential of underwater television in prospecting for crabs. Bottom resources of wide areas of the continental shelf off Alaska are only poorly known. The demonstrated ability of UTV for locating king crab, shrimp, and other marine life indicates its possible application in future exploratory surveys.

Alaska Fisheries Exploration and Gear Research

SHELLFISH EXPLORATIONS STARTED BY RESEARCH VESSEL "PARAGON":

On June 16, the U. S. Bureau of Commercial Fisheries chartered exploratory fishing vessel Paragon started shellfish explorations from Kodiak westward. As a warm-up, one haul of 1,200 pounds of 16-21 count (heads-on) sidestripe shrimp was taken in Marmot Bay, off Kodiak. In addition, a nearby drag with an 8-foot scallop dredge yielded 4 bushels of up to $7\frac{1}{2}$-inch scallops.

* * * * *

KING CRAB TAGGING:

The king crab fishery began to operate in June in the Kodiak area after a 2-month period of inactivity. The first research charter cruise of the season by the Bureau of Commercial Fisheries started in late May and continued until June 15. Fishing for crab with trawls and conventional crab pots at 11 locations in the Portlock Bank area yielded 3,560 king crab. Over 3,000 of those crabs were tagged and released.

Botulism Research

FEDERAL GOVERNMENT COMMITTEE FORMED TO COORDINATE RESEARCH:

A permanent Federal Government committee, called the Interagency Botulism Research Coordinating Committee (IBRCC), was formed recently as a result of a meeting held in February 1964 of officials of various Federal Government agencies in Washington, D. C. Members of IBRCC are from the Bureau of Commercial Fisheries, Bureau of Sport Fisheries and Wildlife, Public Health Service, Atomic Energy Commission, and the Food and Drug Administration.

The purpose of the committee is to (1) coordinate exchange of information, (2) coordinate to the degree possible interagency research programs, and (3) to serve as consultants in the field on current and projected Government research programs on Cl. botulinum. Although the scope of interest of the agencies represented are applicable to all food products, priority attention was being given to fishery products. The coordinated reports of this committee will provide an up-to-date review of the botulism research field and its direct application to the fishing industry.

California

COMMERCIAL SHRIMP QUOTA OFF CRESCENT CITY-EUREKA AREA INCREASED:

The shrimp quota in Area A, off the coast of the Crescent City-Eureka area, Calif., was raised to one million pounds at a special meeting of the California Fish and Game Commission in Sacramento July 13, 1964. The quota, which affects landings, was raised from the 500,000-pound limit set June 26 in San Francisco, and was in accordance with a survey of the Area A shrimp grounds made by the Department of Fish and Game and representatives of the commercial shrimp industry.

The survey showed there was about 2.2 million pounds of shrimp in the Area A grounds, which is about 50 miles square. Although the 2.2 million pounds is more than was found during the preceding preseason survey, the Department pointed out that it is only half the shrimp population of last year (1963).

The Commission asked the Department to continue monitoring the shrimp population in Area A and to report the latest findings to the Commission at its August 28, 1964, meeting scheduled in Sacramento. The Commission indicated that should the findings be different from those of the last survey, the quota might be raised or lowered, depending on the evidence presented. (California Department of Fish and Game, July 18, 1964.)

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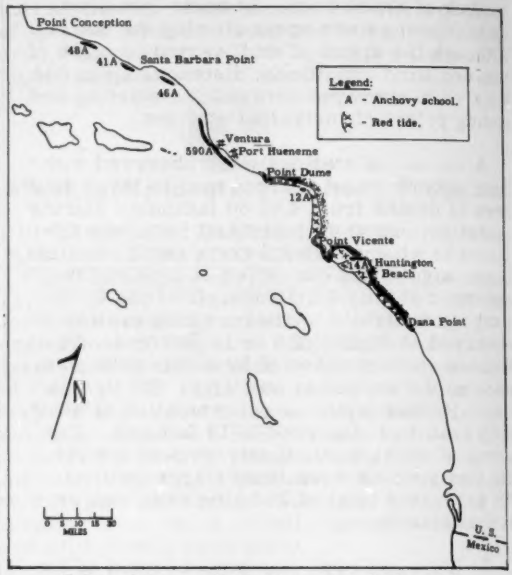
PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 64-11-Pelagic Fish (June 15-17, 1964): To determine the inshore distribution and abundance of pelagic fish schools, the inshore area from Point Conception to the United States-Mexican Border was surveyed from the air by the California Department of Fish and Game Cessna "182" N9042T.

On June 15 the area from Point Vicente to Huntington Beach was scouted but visibility was very poor and no fish schools were sighted. The following day, the area from Point Vicente to the United States-Mexican Border was covered. It was observed that "red tide" conditions prevailed along the shoreline from the western Los Angeles-Long Beach harbor area to Dana Point. Only



Pelagic fish survey Flight 64-11, June 15-17, 1964.

10 northern anchovy (Engraulis mordax) schools were sighted.

On the last day of the survey the area from Point Conception to Dana Point was scouted. Large concentrations of anchovies (638 small schools) were sighted between Point Dume and Santa Barbara Point, mainly in the Ventura-Port Hueneme area. From Santa Barbara Point to Point Conception 89 small anchovy schools were seen. "Red tides" prevailed between Dana Point and Point Dume. A total of 26 anchovy schools were sighted in that area.

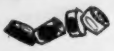
Note: See Commercial Fisheries Review, June 1964 p. 11.

Cans--Shipments for Fishery Products

January-May 1964: A total of 1,100,953 base boxes of steel and aluminum was consumed to make cans shipped to fish and shellfish canning plants in January-May 1964, a decrease of 8.7 percent from the 1,205,362 base boxes used during the same period in

1963. The decline was due partially to a drop in the canning of jack mackerel and Maine sardines.

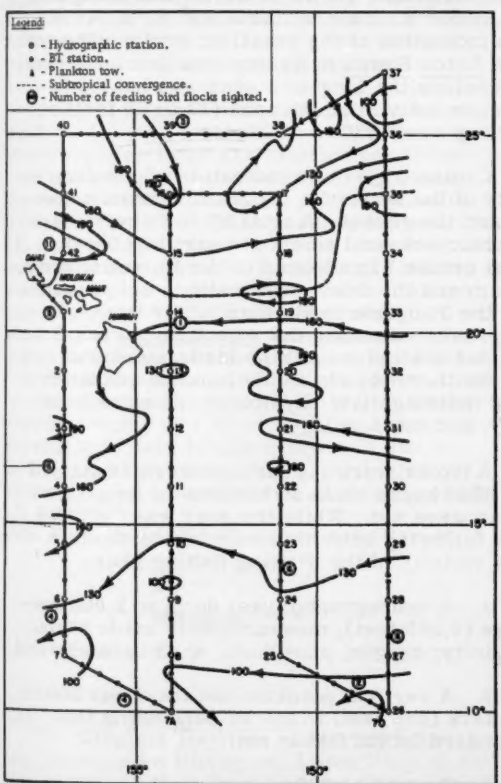
Note: Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14" x 20" in size. Tonnage figures for steel (tinplate) cans are derived by use of the factor 23.5 base boxes per short ton of steel. (In the years 1962 and 1963, tonnage data were based on the factor 21.8 base boxes per short ton of steel.) The use of aluminum cans for packing fishery products is small.



Central Pacific Fisheries Investigations

TRADE WIND ZONE OCEANOGRAPHIC STUDIES CONTINUED:

M/V "Townsend Cromwell" Cruise 4 (May 14-June 5, 1964): This was the fourth in a series of oceanographic cruises to determine rates of change in the distribution of properties in the trade wind zone of the central North Pacific. The research vessel Townsend Cromwell, of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu, Hawaii, operated in an area of the Central North Pacific Ocean bounded by latitudes 10° N., 27° N. and longitudes 148° W., 158° W. during this cruise.



Cruise track chart of M/V Townsend Cromwell Cruise 4 (May 14-June 5, 1964) showing contours of 20° isotherm depth.

A total of 43 oceanographic stations were occupied along the cruise track (chart) during this cruise. At each station temperatures and samples for salinity analysis were obtained at 20 depths to 1,500 meters.

Bathythermograms (BT) were obtained at 30-mile intervals along the cruise track. Between stations 19 and 21, 26 and 28, 35 and 37, BT casts were made at 10-mile intervals. The BT data were coded and transmitted four times daily to Fleet Numerical Weather Facility, Monterey, Calif. Surface bucket temperatures and water samples for salinity analysis were obtained at each BT observation.

At station 33, subsurface currents were measured at depths of 10, 25, 50 and 75 meters, using an Ekman meter, while drifting relative to a parachute drogue set at 1,200 meters.

Ten plastic enclosed drift cards were released at 30-mile intervals along the entire cruise track. Drift cards also were released hourly along the track between Kahului and 18°30' N. latitude and between oceanographic station 42 and Honolulu.

Standard marine weather observations were made and transmitted daily at 0000, 0600, 1200 and 1800 GMT.

Colored photographs of cloud formations were taken each day. No solar radiation measurements were taken because the pyrheliometer was inoperative. One-half hour surface plankton tows were made using a 1-meter net at 2000 daily. Flyingfish collected from the vessel's deck were preserved in formalin.

A standard watch for bird flocks and fish schools was kept by vessel personnel during daylight hours. In addition, observers aboard the vessel from the Smithsonian Institution kept their own watch for birds.

Preliminary inspection of the vertical temperature profiles during this cruise indicated that, in general, a relaxation of the current flow and a warming of the surface waters had

been taking place shortly before the beginning of this cruise. The eddies in the area were less pronounced than in the previous cruises and the general westward flow-pattern was weaker and more regular as deduced from geostropic interpretations of the 20° isotherm depths. The warming effect was seen as a gradual northward creeping of surface isotherm and a shallowing of the mixed layer depth. Surface temperatures ranged from 27° C. (80.6° F.) in the southern portion of the cruise area to 22° C. (71.6° F.) in the northeastern portion.

A feature which became more pronounced during this cruise was the rapid southward rise in surface temperature of 0.5° C. (32.9° F.) or more per 30 miles beginning at 15° N. latitude. Coresponding with that temperature rise was the formation of a sharp near-surface thermocline which deepened rapidly and finally merged with the main thermocline. Numerous feeding birds were seen in association with those features.

Note: See Commercial Fisheries Review, August 1964 p. 17.

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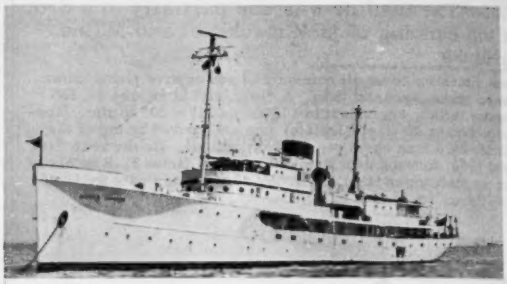
"ANTON BRUUN" PARTICIPATION IN INTERNATIONAL INDIAN OCEAN EXPEDITION:

With the completion of Cruise 5 of the oceanographic research vessel Anton Bruun in June 1964, the U. S. Bureau of Commercial Fisheries Biological Laboratory in Hawaii completed the field aspects of its participation in the International Indian Ocean Expedition. The Laboratory's program was carried out in conjunction with and as part of the United States Program in Biology as coordinated by the Woods Hole Oceanographic Institution.

The Laboratory was responsible for the planning and execution of four cruises of the Anton Bruun that included studies of the demersal fish and invertebrate resources in the Bay of Bengal from March to May 1963 (Cruise 1), and in the Arabian Sea from November to December 1963 (Cruise 4B); and studies of the pelagic fish resources in the central and western Indian Ocean from May to July 1963 (Cruise 2), and from January to May 1964 (Cruise 5).

In the survey of the demersal fish and invertebrate resources of the Bay of Bengal (Cruise 4B), a total of 86 successful hauls was made with the Gulf of Mexico shrimp trawl. On Cruise 2, long-line fishing was carried out at 33 stations which were spaced at intervals along longitude 70° E. between latitudes 18° N. to 37° S. and along longitude 80° E. from latitudes 30° S. to 02° N. On Cruise 5, a total of 38 long-line fishing stations was occupied along longitude 55° E. from latitudes 10° N. to 36° S. and along longitude 75° E. from latitudes 43° S. to 04° N. An indication of the excellent performance of the Anton Bruun in fishing was that on several occasions the long-line gear was hauled in successfully in rough seas (12 to 20 feet) and strong winds (30 to 35 knots).



Oceanographic research vessel Anton Bruun, participating in the International Indian Ocean Expedition, in Bombay Harbor, India.

Cruise 5 gives an indication of the diversity of the scientific program carried out on board the vessel. A total of 26 fishermen, technicians, and scientists participated on that cruise. In addition to the Bureau's program and the basic observations scheduled by the Program in Biology, other interests represented among the scientific party included studies on marine birds, medusae, parasitic copepods and helminths, plankton and dinoflagellate physiology, plankton ecology, and meteorology.

A typical work day during the cruise started at 0500 hours when 50 baskets of long-line gear were set. While the gear was "soaking," the following activities were carried out in the vicinity of the drifting fishing gear:

1. A hydrographic cast down to 2,000 meters (6,562 feet); measurements made of the salinity, oxygen, phosphate, and silicates;

2. A vertical plankton net tow from 200 meters (656 feet) to the surface using the standard Indian Ocean net;

3. A vertical 200 meters to the surface micro-plankton net tow for phytoplankton studies.

4. Water samples from various depths for purposes of primary productivity studies and phytoplankton pigment studies;

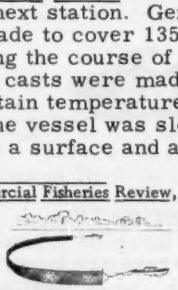
5. A multiple plankton net tow using the Bé nets which permit sampling simultaneously the zooplankton fauna at various depths ranging from the surface down to 2,000 meters.

6. High-level weather observations made with Radiosonde balloons.

The hauling-in of the long-line gear commenced at about 1300 hours. Depending on the size of the catch, hauling took from 2 to 3 hours. Because of the high freeboard of the Anton Bruun, the large fish were hoisted on board in a 8 x 4-foot rectangular net. Hoisting of the net was done with a hydraulic boom. Each fish when landed was identified and length and weight measurements taken. The external body surfaces were examined for parasitic copepods and parasitic trematodes. When present, those parasites were preserved for later detailed studies.

Other biological material collected included: (1) guts and gills of fish which were preserved for later examination for trematode parasites, (2) preservation of ovaries for maturation studies, (3) preservation of stomach contents of fish for food studies, and (4) collection of blood samples from tuna for subpopulation studies. A number of whole specimens were also preserved for taxonomic studies. After hauling had been completed, the Anton Bruun then commenced on a run to the next station. Generally, an attempt was made to cover 135 to 140 nautical miles. During the course of the run, bathythermograph casts were made at 3-hour intervals to obtain temperature data and at 2000 hours the vessel was slowed down in order to take a surface and an oblique plankton haul.

Note: See Commercial Fisheries Review, April 1963 p. 16.



Chesapeake Bay

CHESAPEAKE RESEARCH COUNCIL ORGANIZED:

The Virginia Institute of Marine Science, the Chesapeake Biological Laboratory of the University of Maryland, and the Chesapeake Bay Institute of Johns Hopkins University have organized the Chesapeake Research Council. In discussing the purpose of the Council, the Director of the Virginia Institute of Marine Science said, "This organization of the three primary research institutions concerned with the estuarine waters of Chesapeake Bay and the ocean waters off the coast of Virginia and Maryland will allow for a coordinated approach to common problems. It provides a framework within which we can effectively cooperate in programs concerning all three agencies."

The Chesapeake Research Council will hold its first full meeting in January 1965. At that time staff members of the three research institutions will summarize their present research programs and consider matters of mutual interest. The Chesapeake Biological Laboratory has been conducting research on Maryland's marine resources since 1927, and the Chesapeake Bay Institute has been engaged in studies of marine waters throughout Maryland and Virginia for the past 16 years. The program of the Virginia Instititue of Marine Science was started in 1940.

The three institutions have always worked closely together on common problems in the past. Scientists from the three institutions established the Atlantic Estuarine Research Society in 1949 for the express purpose of exchanging ideas and reporting their research programs. That organization, however, has become so large, embracing members from Maine to Florida, that it seemed wise to create another smaller organization for specific work around Chesapeake Bay. Because of the unified nature of the Chesapeake Bay and the Virginian sea portion of the Atlantic, and because many of the problems in the area are of a long-term nature, scientists have sound reasons for approaching their investigations in a cooperative manner. (Virginia Institute of Marine Science, Gloucester Point, July 21, 1964.)

Clams

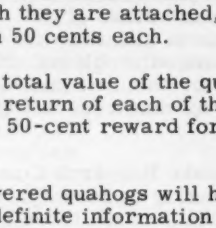
RESEARCH BY UNIVERSITY OF RHODE ISLAND:

Nine bushels of the world's most expensive quahogs (clams), valued at about $1,750, have been placed at the bottom of Narragansett Bay, R.I., with a University of Rhode Island "brand" on them. In the middle of each of the

3,500 quahogs is a red plastic disk with the notation on the perimeter: "Narragansett Marine Lab., Kingston, R.I." The center of the half-inch disk carries the word "Reward" and an identifying number. If returned to the University of Rhode Island with the half of the shell to which they are attached, the disks will be worth 50 cents each.

Thus, the total value of the quahogs is based on the return of each of the 3,500 specimens with a 50-cent reward for each individual return.

The recovered quahogs will help in developing some definite information about harvesting and growth rates of shellfish under varying underwater conditions around Narragansett Bay. An Associate Professor of Oceanography at the University urges the public to return the shell-half with the tag on it, but not to send the entire quahog through the mail. (Source: University of Rhode Island--reprinted from National Oceanographic Data Center Newsletter, May 31, 1964.)



Federal Aid

PACIFIC NORTHWEST STATES RECEIVE FUNDS FOR FISHERIES PROGRAM:

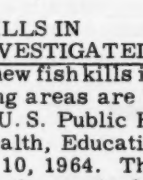
Pacific Northwest States will receive $1,915,000 in Federal aid funds for construction, operation, and maintenance of fishery facilities, stream improvement, and operational studies in 1964/65 fiscal year under the Columbia River Fishery Development Program, the U.S. Bureau of Commercial Fisheries announced July 17, 1964. The States of Washington, Oregon, and Idaho will share the Federal money as part of the program aimed at improving anadromous fish runs of the Columbia River and its tributaries, said the Bureau's Regional Director at Seattle, Wash.

The major portion of the total is an allocation of $989,000 for operation and maintenance of 8 salmon and steelhead hatcheries in Washington and 7 in Oregon which were either built or remodeled with Federal funds but are operated by the states. This allotment includes $412,000 for 6 salmon hatcheries operated by the Washington Department of Fisheries; $145,000 for 2 steelhead hatcheries operated by the Washington Department of Game; $380,000 for 6 salmon hatcheries operated by the Oregon Fish Commission; and $52,000 for the Oregon Game Commission's Gnat Creek steelhead hatchery near Astoria.

Those three States also will receive $48,000 for stream improvement and $98,000 for fish screen maintenance, plus $181,000 for their work in cooperation with "Operation Fin Clip," the Bureau's massive appraisal program which is being conducted over a 10-year period to evaluate the contribution of the hatcheries to the fish runs.

A total of $198,000 is allocated for construction, of which $75,000 will be contracted to Idaho for 26 fish screens on the Salmon River and its tributaries; $67,000 to Oregon for a new pipeline and rearing pond at Big Creek hatchery near Astoria; and $28,000 each to Oregon and Washington for facilities to remove log jams and debris from various streams.

A sum of $300,000 is being earmarked by the Bureau for operational studies by the fishery agencies of the three States and their respective universities. Included in that phase of the program are a study on selective breeding of salmon and steelhead by the University of Washington, an investigation by Oregon State University of factors involved in the transition which takes place in young salmon as they move from fresh to salt water, and research by the University of Idaho on development of a toxic material which would eliminate trash fish and predators without harming salmon. The various State fishery agencies are also planning a number of other research projects.



Fish Kills

MORE FISH KILLS IN LOUISIANA INVESTIGATED:

A series of new fish kills in Louisiana's sugar-cane growing areas are being investigated, announced the U.S. Public Health Service, Department of Health, Education, and Welfare (HEW) on July 10, 1964. The State of Louisiana water-pollution control agency reported fish kills in 5 bayous and canals in Southern Louisiana during a single week this past June and Public Health Service scientists were attempting to determine the cause of those kills.

State officials had previously requested the Public Health Service to give technical assistance in the lower Mississippi to locate, identify, and abate all sources of pesticide pollution. The team investigating the later fish kills was operating under that agreement. The request for technical assistance was made in April 1964 after the Public Health Service and the State of Louisiana announced that toxic synthetic organic materials appeared to have caused the large fish kills in the lower Mississippi River.

A four-State water-pollution enforcement conference called by the Secretary of Health, Education, and Welfare, in New Orleans in May found that the pesticide endrin was the cause of the massive fish kills during the fall and winter of 1963 and that industrial operations at Memphis, Tenn., were sources of endrin discharge into the Mississippi River.

HEW officials pointed out that the water from the bayous and canals involved in the later Louisiana fish kills does not flow into the Mississippi or the Atchafalaya Rivers where the massive fish kills took place last fall and winter.

The bayous and canals involved were: Grand Bayou, Bayou Blach, Theriot Canal, Bayou Chevreuil, and Company Canal. (Public Health Service, U. S. Department of Health, Education, and Welfare, July 10, 1964.)

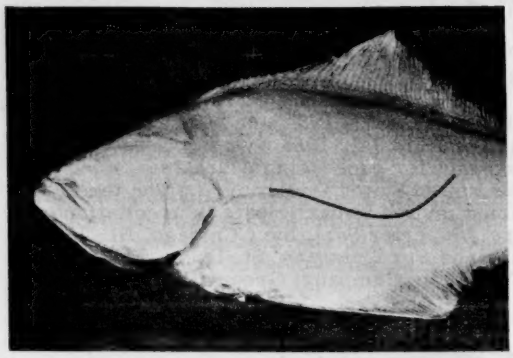
Note: See Commercial Fisheries Review, January 1964 p. 74.

Flatfish

NORTH PACIFIC MIGRATIONS OF HALIBUT AND SOLE:

A halibut tagged near Kodiak, Alaska, in July 1951 was recovered over 1,400 miles away off Tillamook Rock in northern Oregon waters in August 1952, according to the Oregon Fish Commission. Another halibut tagged off Unalaska, Alaska, in May 1959 was recovered off the southern Oregon coast in the vicinity of Cape Arago in September 1961, after traveling a minimum distance of 2,000 miles. That distance indicates an average rate of movement of about 75 miles a month.

The 2 halibut are among the more than 100,000 that have been tagged since investigations were begun under the sponsorship of the International Pacific Halibut Commission in 1925. The movements of halibut and other species have important implications in fisheries management.



A dart tag in position on a North Pacific halibut.

Tag recoveries have also indicated extensive migrations by other flatfish. In February 1960, the Oregon Fish Commission released 5,026 tagged petrale sole near Heceta Bank off the central coast of Oregon. Through April 1964, a total of 340 of those fish had been recovered. The fish were recaptured from such widespread spots as southern Vancouver Island (British Columbia), Canada, about 360 miles northward, to Trinidad Head, Calif., approximately 215 miles south of the tagging area. Slightly over half of the recoveries were within 30 miles of the tagging area, while the remainder were spread along 570 miles of the coastline of northern California, Oregon, Washington, and British Columbia.

English sole are also wanderers, according to the Oregon Fish Commission, travelling about the same distances as petrale sole, but with an apparent tendency to move toward northern waters.

Dover sole apparently have a more limited range than English or petrale sole. In April 1955, for example, some 2,406 Dover sole were tagged and released by the Oregon Fish Commission west of Grays Harbor, Wash. Of the 284 recoveries as of mid-1964, only 10 were picked up at distances greater than 30 miles from the point of tagging. The maximum migrations were by 2 fish captured off Vancouver Island, a distance of from 110-140 miles, and 1 off northern California, a distance of about 360 miles. (Source: Notes on Movements of Tagged Sole and Halibut, Oregon Fish Commission.)

Fur Seals

PROCESSING CONTRACT NEGOTIATIONS BY U.S. DEPARTMENT OF THE INTERIOR:

The U.S. Department of the Interior announced July 17, 1964, the start of negotiations late in July 1964 with firms seeking a contract for processing Alaska sealskins for the United States Government. The three firms invited to participate in negotiations are: Superior Seal, Inc., Chicago, Ill., Pierre Laclede Fur Company, St. Louis, Mo., and Fouke Fur Company, Greenville, S.C.

Each of the companies has been required to submit with its proposal to the Government, samples of processed furs for use in a three-phase evaluation program: (1) evaluation of the sealskins by a panel of experts from various Federal agencies, (2) physical and chemical tests conducted by the National Bureau of Standards, and (3) a marketability study based on garments manufactured from the sample sealskins.

Each year the U.S. Bureau of Commercial Fisheries harvests some 80,000 fur seals on the Pribilof Islands in Alaska. The surplus animals are taken from a herd of about 1,500,000 animals which is managed under the terms of an international agreement with Canada, Japan, and the U.S.S.R. The agreement provides that Canada and Japan shall each receive 15 percent of the sealskins harvested on the Pribilof Islands.

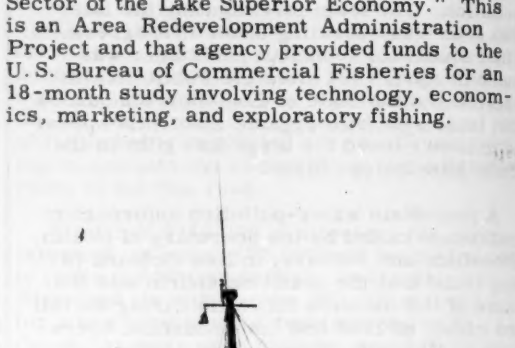
Following curing of the sealskins on the Pribilofs by the Government, the skins are shipped to a processor who dresses and dyes them under contract. The furs are then sold at semiannual auctions for the account of the United States Government. At the last auction held in April 1964, the 2 types of furs into which Alaska seal are processed brought average prices of $90.60 and $48.82 per skin.

Great Lakes Fisheries

Exploration and Gear Research

SCHEDULE OF FISHERY EXPLORATIONS IN LAKE SUPERIOR:

The Lake Superior fisheries exploration and gear research program of the U.S. Bureau of Commercial Fisheries for Fiscal Year 1965 will include basic seasonal fishing surveys timed to significant production periods. This is one phase of the "Technical Assistance Project for Providing Assistance and Other Services to the Commercial Fisheries Sector of the Lake Superior Economy." This is an Area Redevelopment Administration Project and that agency provided funds to the U.S. Bureau of Commercial Fisheries for an 18-month study involving technology, economics, marketing, and exploratory fishing.



U.S. Bureau of Commercial Fisheries exploratory fishing vessel Kaho.

Lake Superior operations of the Bureau's exploratory fishing vessel Kaho, based at Saugatuck, Mich., will be confined for the most part east of Keweenaw Peninsula in Lake Superior and will consist of surveys to be made during three critical production periods in the Lake Superior commercial fishery. The surveys will be confined to a limited area so as to assure thorough enough coverage to permit an accurate evaluation of methods used.

Cruise 18 by the Kaho (May 25-June 10, 1964) was made during the time of year when the inshore smelt-spawning-run fishery had just about finished and prices for chubs and lake herring (cisco) were declining while chub production in the lower lakes increased. The objectives of that cruise were:

1. Assessing area bottom conditions for suitability to otter (bottom) trawling.

2. Determining vertical and horizontal distribution of fish concentrations as shown on depth sounder recordings.

3. Determining practicability of using otter trawls for economical production of smelt, chubs, and lake herring during that period.

4. Testing midwater trawl for capturing midwater concentrations of fish if located.

M/V Kaho cruise scheduled for August 4-24, 1964: At this time of year smelt reportedly interfere with gill-net fisheries at 15-fathom depths off the east shore of Keweenaw Peninsula which may indicate smelt are available to otter trawls in significant quantities. Objectives of this cruise will include:

1. Determining midsummer availability of smelt, chubs, and lake herring to trawls.

2. Following through on leads in areas west of Keweenaw Peninsula if time is available.

M/V Kaho cruise scheduled for November 6-25, 1964: At this time of year heavy production of lake herring with traditional gear is experienced. However, glut conditions soon develop and human food markets are quickly swamped. Although animal food markets will accept lake herring, traditional fishing gear cannot produce them profitably because of the limited landed value of animal food fish. Objectives of this fishing survey will include:

1. Attempting to improve quality of lake herring produced during spawning season by catching with trawls or seines and utilizing improved holding systems--in cooperation with technological assistance.

2. Determining the practicability of utilizing otter trawls, midwater trawls, or lampara seines for economical production of lake herring for animal food markets.

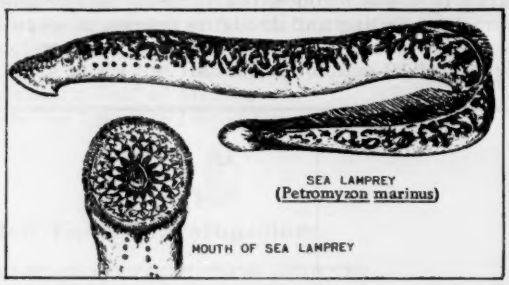
Cruise reports on these surveys by the Bureau's exploratory fishing vessel Kaho will be published on completion of each.

Note: See Commercial Fisheries Review, August 1964 p. 23.

Great Lakes Fishery Investigations

SEA LAMPREY CONTROL AS OF JUNE 1964:

The sea lamprey 1964 catch at Great Lakes assessment barriers continued at a somewhat higher level than in the previous 2 years. The take of spawning-run lampreys was 10,664 by June 26, 1964, compared to 9,948 in 1963 and 8,276 in 1962. The Brule River, Douglas County, Wis., contributed 58 percent of the total sea lampreys this season compared to 32 percent last year. The index barriers operated on 3 Green Bay streams have captured a total of 4,569 compared to 7,425 a year earlier. The index barrier in Pere Marquette River was shut down on June 14. The total number of sea lampreys was 678 for the season. The Ocqueoc River barrier on Lake Huron captured 2,671 lampreys compared to 4,673 in 1963.



The successful treatment of the Big Manistee River, Manistee County, Mich., added the largest river yet to the growing list of streams to be treated in the United States. The stream discharge was 1,844 cubic feet per second (c. f. s.) and it required 31,392 pounds of lampricide (TFM) to complete the treatment. During the latter part of June the Ford River system, which drains into Green Bay, was treated. Sea lamprey ammocetes were distributed 90 miles upstream. However, flows in the main stream and tributaries were sufficiently satisfactory to complete the treatment successfully. Chemical treatment of Cedar River, Menominee County, Mich., had to be stopped after 4 days of treating in the headwaters when low-water discharge and high storage capacity of the main river pools prevented maintenance of lethal concentrations of TFM between access points to the river. It will be necessary to treat the main river between 100 and 200 c. f. s. of stream flow.

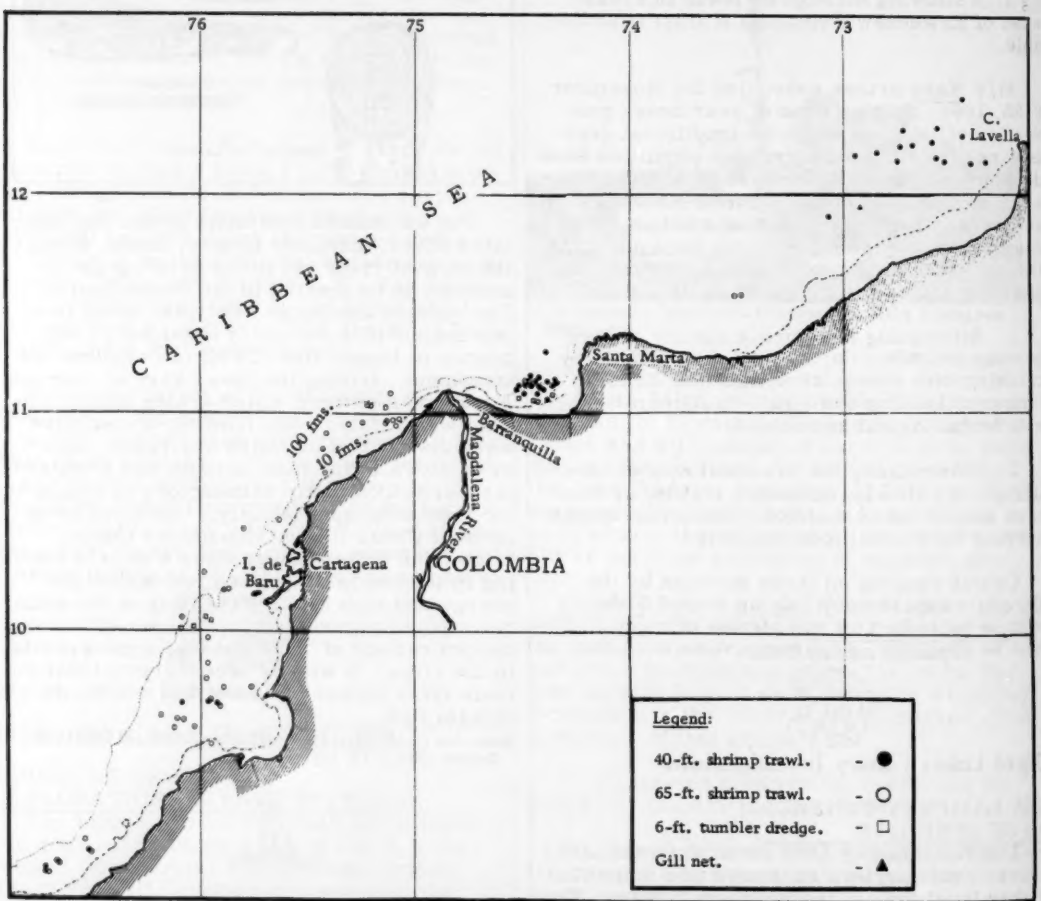
Note: See Commercial Fisheries Review, February 1964 p. 62; October 1963 p. 23; July 1963 p. 38.

Gulf Exploratory Fishery Program

TRAWLING SURVEY OFF THE CARIBBEAN COAST OF COLOMBIA: M/V "Oregon" Cruise 92 (May 4-June 17, 1964): An exploratory trawling survey off the Caribbean coast of Colombia was the purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon. This cruise completes the Bureau's preliminary survey of the outer Continental Shelf and Slope zones of the Central Western Atlantic mainland between Cape Hatteras, N. C., and Fortaleza, Brazil--a linear distance of some 7,200 miles. During this cruise shrimp trawling and dredging transects were made in all major trawlable areas between depths of 10 and 500 fathoms.

The survey gear used was 40- and 65-foot flat shrimp trawls fished on 6- and 8-foot trawl doors, and 5- and 6-foot tumbler dredges. Trolling lines were out during all daytime running, and monofilament gill-net sets were made on surface indications of Spanish mackerel and tuna.

Shrimp and other Crustaceans: Potential fishing grounds for brown-grooved shrimp (Penaeus aztecus) were located in the area between Pta. San Bernardo and the Gulf of Darien. An estimated 700 square miles of good trawling bottom was found in depths of 10 to 40 fathoms and nighttime dragging yielded varying catches of that species on all drags. Working time in that area was limited, but two nights of double-rig trawling using a 40-



Areas investigated during Cruise 92 of the M/V Oregon (May 4-June 17, 1964).

foot and 65-foot trawl simultaneously produced about 540 pounds of heads-on brown shrimp with a few scattered Brazilian shrimp (P. braziliensis) mixed in the shallower catches. The 65-foot trawl yielded 350 pounds compared with 190 pounds for the 40-foot trawl. The shrimp were of mixed sizes, ranging from a heads-off count of 20 to 60 per pound, and they averaged 36-40 count.

Royal-red shrimp (Hymenopenaeus robustus) were found in light concentrations between 220 and 240 fathoms south of Santa Marta. A single catch of 50 pounds of royal-red off Cape la Vela indicated a potential fishing ground in that area, but extremely adverse sea conditions precluded further deep-water work in the region. The shrimp size was unusually large with the heads-off count averaging about 22 shrimp to the pound.

Catches of lobsterette (Nephrops binghami) during the cruise of about 15 pounds per hour with the 40-foot trawl were made in the 170-190 fathom depth range.

Snapper: Unusually large numbers of several species of snapper were taken in the shrimp trawling operation in depths less than 60 fathoms. Several commercially valuable species were observed--principally Lutjanus blackfordi and L. vivanus. Those observations indicated good fish trawling possibilities for snappers but no fish trawls were used on this cruise.

Tuna and Mackerel: Heavy seas and strong winds were encountered during most of the cruise and sea surface conditions were poorly suited to surface sightings. During the work off Colombia, only one day of ideal weather conditions was encountered. During the work in the area between Cape Aguja and Cape la Vela, numerous schools of very small blackfin tuna (estimated $\frac{1}{2}$- to 2-pound size) were observed. A one-hour set with a 1,500-foot (by 60-foot deep) 6-inch mesh monofilament gill net yielded nothing. All of the fish observed were obviously too small for that mesh size. A single 4-pound blackfin was taken trolling. Several broadbill swordfish and blue marlin sightings were made in the same area.

En route to Pascagoula, one day each was spent tuna scouting in the St. Andrews Island and Yucatan Channel areas. A few small schools were observed around St. Andrews, but the trolling catch was limited to a single wahoo. No schools were observed in the Yucatan Channel, but 30 blackfin (3 to 18 pounds each), 10 little tuna (Euthynnus alleteratus), and 20 runners (Elagatis bipinnulatus) were caught on trolling lines over a few hours at the south end of Arrowsmith Bank.

On this cruise, an apparently uncharted flat-topped sea mount was discovered about 30 miles east of Cozumel Island. The top leveled smoothly at 150 fathoms covering an area of more than 20 square miles. Extensive sounding transects were made of the area.

In cooperation with the National Geographic Society, a series of 500 on-bottom 35 millimeter color photographs were taken on this cruise along the 100-fathom curve in the northern Gulf of Mexico.

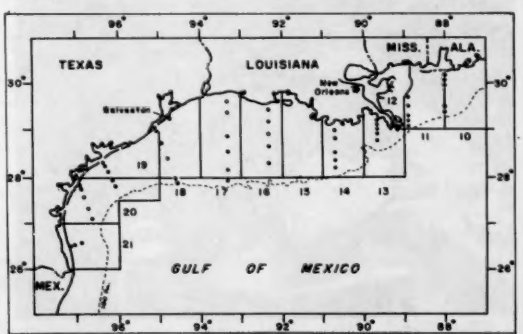
Note: See Commercial Fisheries Review, June 1963 p. 25.

Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-18 (June 17-28, 1964): Catches of brown shrimp were predominant during this shrimp sampling cruise in the Gulf of Mexico by the chartered research vessel Gus III, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Galveston, Tex. Eight statistical areas from off the Louisiana coast extending westward to Texas were covered, and standard 3-hour tows were made with a 45-foot shrimp trawl.

The best catches of large brown shrimp counting 12-15 to the pound were from the over 20-fathom depth of area 16 (46 pounds) and area 18 (14 pounds). Area 18 also yielded



Station pattern for shrimp distribution studies by M/V Gus III, Cruise GUS-18.

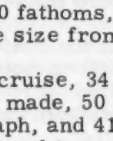
18 pounds of 15-20 white shrimp from the under 10-fathom depth, and 68 pounds of small (over 68 count) brown shrimp from 10-20 fathoms.

Area 19 yielded 83 pounds of brown shrimp (51-67 count) from 10-20 fathoms, and from the under 10-fathom range the yield was 16 pounds of 15-20 white shrimp and a small quantity of very small brown shrimp.

A total of 56 pounds of small brown shrimp (51-67 count) was taken from area 20, most of it from 10-20 fathoms, and a smaller quantity of the same size from over 20 fathoms.

During this cruise, 34 tows with a 45-foot flat trawl were made, 50 plankton tows, 45 bathythermograph, and 41 nansen casts. One of the shrimp trawl tows was made in 150 fathoms, but no shrimp were caught at that depth.

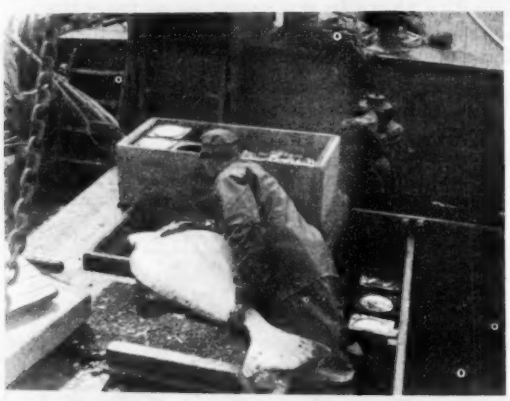
Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.
(2) See Commercial Fisheries Review, August 1964 p. 28.



Halibut

NORTH PACIFIC HALIBUT LANDINGS, 1964 SEASON TO JULY 20, 1964:

North Pacific halibut landings by United States and Canadian vessels during the 1964 fishing season to July 20, 1964, inclusive, totaled 13.1 million pounds in Area 2 and 22.2 million pounds in Area 3A, the International Pacific Halibut Commission announced July 21, 1964.



Loading a large halibut in the hold of a fishing vessel in the North Pacific. (Metal cans are used to save the livers.)

In Area 2, the halibut fishing season will close at the time of the attainment of the catch limit of 25 million pounds or on September 15, 1964, whichever is earlier. (The rate of landings from Area 2 is expected to be lower during the final months of the 1964 season due to the diversion of part of the halibut fleet to the fisheries for salmon and sablefish.)

In Area 3A, the halibut fishing season will close at the time of attainment of the catch limit of 34 million pounds or on October 15, 1964, whichever is earlier. The closing date of Area 3A will be announced 18 days in advance.

* * * * *

QUALITY EVALUATION OF EX-VESSEL PACIFIC LANDINGS CONTINUED:

The second phase of an ex-vessel halibut quality evaluation project was started in Seattle, Wash., and Ketchikan, Alaska, in June 1964 by the U. S. Bureau of Commercial Fisheries. The quality evaluation project during the 1964 North Pacific halibut fishing season is based on the following dual approach: (1) application of a statistical sampling and quality evaluation system for landed halibut; and (2) experimental study of iced and frozen dressed halibut to relate quality changes to the time and temperature factors in commercial preservation practices. At the end of the 1964 fishing season, the results from both quality studies will be analyzed in economic terms with the halibut industry to determine the feasibility of applying a useful grade standard for fresh and frozen dressed halibut.

The current quality evaluation study is a continuation of an investigation begun in 1963. Two of the conclusions drawn as a result of the 1963 halibut studies are: (1) dockside grading is significantly influenced by economic, seasonal, and industry factors that may not be related to actual quality; and (2) the small price differential between dockside grades and the fact that grade 1 is a very broad quality designation does not encourage quality improvement.

Those and other conclusions were discussed informally at meetings of halibut vessel owners, fishermen, buyers, and processors. Buyers and processing firms recognize that the present system does not adequately reflect quality and are interested in a guideline that will eliminate prejudice and improve quality at the grading table.

Industrial Fishery Products

U.S. MEAL, OIL, AND SOLUBLES: Production by Areas, June 1964: Preliminary data on U.S. production of fish meal, oil, and solubles for June 1964 as collected by the U.S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U.S. Production[1/] of Fish Meal, Oil, and Solubles by Areas, June 1964 (Preliminary) with Comparisons

Area	Meal	Oil	Solubles	Homogenized[3/]
	Short Tons	1,000 Pounds	(Short Tons)	
June 1964:				
East & Gulf Coasts	38,514	37,588	16,508	-
West Coast[2/]	3,023	2,318	1,486	-
Total	41,537	39,906	17,994	-
Jan.-June 1964 Total	81,899	74,574	35,568	-
Jan.-June 1963 Total	90,156	69,788	36,643	3,841

1/Does not include crab meal, shrimp meal, and liver oils.
2/Includes American Samoa and Puerto Rico.
3/Includes condensed fish.

* * * * *

Production by Areas, May 1964:

U.S. Production[1/] of Fish Meal, Oil, and Solubles by Areas, May 1964 (Preliminary) with Comparisons

Area	Meal	Oil	Solubles	Homogenized[3/]
	Short Tons	1,000 Pounds	(Short Tons)	
May 1964:				
East & Gulf Coasts	26,450	28,890	11,088	-
West Coast[2/]	2,077	232	1,487	-
Total	28,527	29,122	12,575	-
Jan.-May 1964 Total	41,585	34,123	18,413	-
Jan.-May 1963 Total	55,656	42,158	23,056	2,500

1/Does not include crab meal, shrimp meal, and liver oils.
2/Includes American Samoa and Puerto Rico.
3/Includes condensed fish.

* * * * *

Major Indicators for U.S. Supply, May 1964: United States production of fish meal in May 1964 was lower by 31.6 percent as compared with May 1963. Production of fish oil and fish solubles was down also by 12.3 percent and 31.0 percent, respectively.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, May 1964

Item and Period	1/1964	1963	1962	1961	1960
	(Short Tons)				
Fish Meal:					
Production:					
May	27,304	39,902	40,504	34,446	19,802
January-Apr. 2/	13,058	16,287	20,161	13,657	16,118
Year 3/	-	253,452	312,259	311,265	290,137
Imports:					
May	59,543	30,399	25,269	25,116	9,496
January-Apr.	162,371	133,083	89,164	63,393	45,701
Year	-	383,107	252,307	217,845	131,561
Fish Solubles 4/:					
Production:					
May	11,736	16,997	16,786	13,629	7,370
January-Apr. 2/	5,838	10,398	9,976	8,799	8,841
Year	-	107,402	124,334	112,241	98,929
Imports:					
May	263	438	265	283	59
January-Apr.	1,539	1,678	3,153	729	2,310
Year	-	6,773	6,308	6,739	3,174
	(1,000 Lbs.)				
Fish Oils:					
Production:					
May	29,426	33,544	33,436	34,674	16,339
January-Apr. 2/	5,242	7,853	7,262	4,666	4,094
Year	-	185,827	250,075	258,118	209,143
Exports:					
May	9,329	22,150	6,491	3,192	2,427
January-Apr.	46,693	75,401	51,593	43,900	34,764
Year	-	262,342	123,050	122,486	143,659

1/Preliminary.
2/Data for 1964 based on reports which accounted for the following percentage of production in 1963: Fish meal, 95 percent; solubles and homogenized fish, 99 percent; and fish oils, 99 percent.
3/Small amounts (10,000 to 25,000 pounds) of shellfish and marine animal meal and scrap not reported monthly are included in annual totals.
4/Includes homogenized fish.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, April 1964

Item and Period	1/1964	1963	1962	1961	1960
	(Short Tons)				
Fish Meal:					
Production:					
April	7,094	8,340	9,359	6,112	6,110
January-March 2/	5,964	7,947	10,802	7,545	10,008
Year 3/	-	253,452	312,259	311,265	290,137
Imports:					
April	55,953	26,607	26,390	19,060	10,397
January-March	106,418	106,476	62,774	44,333	35,304
Year	-	383,107	252,307	217,845	131,561
Fish Solubles 4/:					
Production:					
April	3,045	5,031	4,305	2,965	2,870
January-March 2/	2,793	5,361	5,671	5,834	5,971
Year	-	107,402	124,334	112,241	98,929
Imports:					
April	457	218	323	220	134
January-March	1,082	1,460	2,830	509	2,176
Year	-	6,773	6,308	6,739	3,174
	(1,000 Lbs.)				
Fish Oils:					
Production:					
April	3,713	6,551	5,645	3,344	2,401
January-March 2/	1,529	1,301	1,617	1,322	1,693
Year	-	185,827	250,075	258,118	209,143

(Table continued on next column.)

(Table continued on next page.)

Major Indicators for U.S. Supply, April 1964: United States production of fish meal in April 1964 was lower by 14.9 percent as compared with April 1963. Production of fish oil was down by 43.3 percent and that of fish solubles decreased 39.5 percent.

Item and Period	1/1964	1963	1962	1961	1960
	(1,000 Lbs.)				
Exports:					
April	22,773	28,480	10,270	7,351	5,711
January-March	23,920	46,921	41,323	36,549	29,053
Year	-	262,342	123,050	122,486	143,659

1/Preliminary.
2/Data for 1964 based on reports which accounted for the following percentage of production in 1963: Fish meal, 95 percent; solubles and homogenized fish, 99 percent; and fish oils, 99 percent.
3/Small amounts (10,000 to 25,000 pounds) of shellfish and marine animal meal and scrap not reported monthly are included in annual totals.
4/Includes homogenized fish.

* * * * *

FISH OIL PRODUCERS' VIEWS ON MARKET TRENDS:

A technologist of the U.S. Bureau of Commercial Fisheries Technological Laboratory, Seattle, Wash., made a trip through the Midwest and Atlantic Coast Regions this past summer to collect ideas and suggestions on fish oil research, exchange technical information, and to stimulate old and new interest in fish oil. Among his findings was a new trend in the thinking of fish oil producers in those regions. In spite of fish oil selling at a high price--higher than soybean oil--the fish oil producers were not apathetic about future markets for fish oil. They were aware that the existing high prices were due to the European demand and the disappointing catches in the domestic menhaden fishery.

First among the research interests of both fish oil producers and users who were contacted by the Bureau's technologist was the development of an economical commercial method for production of fatty acids from fish oil. A second interest was the development of a commercial method of fractionation of fish oil fatty acids or esters by separating saturates from unsaturates. Some interest was indicated in isolating individual fatty acids.

* * * * *

RAW MATERIAL SCARCE IN MAINE:

Fish meal producers in Maine reported the demand for fish meal and oil this summer was excellent, but with an almost total lack of supply due to the scarcity in Maine of fish fillet waste, as well as a scarcity of whole fish. Because of the drop in price of fish solubles, one Maine producer has been adding his entire output back to fish scrap.

* * * * *

FISH OILS:

U.S. Trends in Supply, Disposition, and Prices, 1946-1964:

SUMMARY: U.S. total supplies of marine oils have increased from a postwar low of 281 million pounds in 1947 to over 450 million pounds in recent years, mainly due to an uptrend in domestic production. But domestic output dropped sharply in 1963 because of a lower yield from menhaden, the leading source of marine oil produced in the United States.

U.S. marine oil exports have expanded greatly in the postwar era (from 15 million pounds in 1946 to 274 million pounds in 1963). Record U.S. exports in 1963 were attributed to the sharp reduction in world output of marine oils coupled with rising prices. Domestic use, which has fluctuated considerably in the postwar period, fell off sharply in 1963, apparently because of increased prices for menhaden oil.

DOMESTIC PRODUCTION AND USE: U.S. marine oil production in the postwar period has ranged from a low of 124 million pounds in 1952 to a high of 266 million pounds in 1961. During the 1950's, production increased rather steadily. However output in 1963 was cut back to only 186 million pounds.

U.S. domestic disappearance during the postwar period has been irregular, ranging from 185 million pounds in 1947 to a low of 83 million in 1954. Domestic use averaged 159 million pounds in 1960-1962, but in 1963 it dropped to 104 million pounds.

Thirty years ago, when sardine oil was more abundant, marine oils were used domestically in shortening manufacture. Use in nonfood products included paints, varnishes, linoleum and other industrial commodities. Today, use in surface coatings has become a major factor. Substantial amounts are used also in lubricant production, in animal feeds, fatty acids, and miscellaneous industrial purposes.

Manufacturers of exterior house paints use heat-bodied marine oils mixed with raw linseed oil. Those marine oils are used also in aluminum paints (exterior and interior), in barn and roof paints, rustproof coatings, and undercoat paints. In varnish manufacture, bodied fish oil is used in connection with tung oil. That outlet probably has been gaining in importance, since the varnish industry has been taking advantage of the lower cost of fish oil to replace some of the high-priced tung oil in varnish formulations.

FOREIGN TRADE: The United States accounts for around 10 percent of total world production of marine oils and ranks as a major country in world trade in marine oils. Basically, U.S. marine oil trade involves exporting menhaden oil and importing the domestically-scarce marine items (mostly whale sperm oil, which is valuable as a lubricant for fine instruments; because it has few economical substitutes, it is stockpiled by the Government as a strategic commodity for defense purposes).

In 1950, the United States reversed a long-term trend by becoming a net exporter of marine oils for the first time. Since then, exports have grown markedly. During 1950-1954, exports averaged 85 million pounds or about 57 percent of domestic production. In 1963, exports totaled almost 275 million pounds, a record. Europe, the leading market, takes around 90 percent of U.S. exports. The Netherlands, West Germany, Norway, Sweden, and Canada have been the major buyers. However, in 1963, exports to the United Kingdom totaled 87 million pounds, the largest for any single country that year. A large part of the menhaden oil used abroad is for margarine, shortening, and other edible products. In those outlets the oils are refined, hydrogenated, and blended with other fats. Hydrogenation removes certain characteristics of marine oils, such as the odor and taste associated with fish oils.

In 1950-1954, U.S. imports of marine oils averaged 72 million pounds or equal to about one-half of U.S. production. Imports in 1963 were 83 million pounds. Japan, Peru, the Netherlands, Norway, and Canada have been the major U.S. suppliers in recent years.

PRICE TRENDS: Fish oil prices (menhaden, crude, tanks, f.o.b., Baltimore) have declined sharply since the end of World War II, from an average of 18.6 cents per pound in 1947 to 4.6 cents in 1962. At the lower level, they were one of the lowest-priced oils on the world market. The relatively low price of fish oil in 1962 gave it a comparative advantage

Table 1 - U. S. Supply and Disposition of Marine Oils, 1946-1963

Year	Supply: Stocks Jan. 1	Supply: Production: Menhaden	Supply: Production: Total production 1/	Supply: Imports 2/	Supply: Total	Disposition: Exports & shipments 3/	Disposition: Domestic disappearance
	(Million Pounds)						
4/1963	5/182	168	186	83	451	274	5/104
1962	133	233	250	85	468	130	156
1961	84	243	266	77	427	126	168
1960	114	189	215	56	385	147	153
1959	126	160	195	50	371	147	109
1958	78	132	172	83	333	96	112
1957	103	122	165	60	328	120	129
1956	105	174	207	70	382	144	135
1955	64	164	191	90	345	143	96
1954	74	144	166	53	293	142	83
1953	94	138	155	69	317	108	135
1952	6/98	100	124	81	304	46	165
1951	7/90	97	140	84	314	51	166
1950	109	79	166	74	350	77	182
1949	134	64	136	46	316	40	167
1948	75	68	131	81	286	20	132
1947	118	66	128	35	281	21	185
1946	119	76	153	31	303	15	170

1/ Includes menhaden, tuna and mackerel, herring, fish liver, whale, and seal oils.
2/ Includes fish livers, vitamins, and drugs derived from marine animals.
3/ Includes re-exports, fish livers, vitamins, and drugs. In 1947 and 1948, includes some exports under voluntary relief programs.
4/ Preliminary data.
5/ Factory consumption used for years in which factory consumption exceeds computed domestic disappearance.
6/ Includes Government stockpile.
7/ Apparent stocks.

Table 2 - U. S. Domestic Utilization of Marine Oils, 1946-1963

Year	Use in shortening	Use in Nonfood Products: Soap	Paint & varnish	Linoleum & oilcloth	Other drying oils	Lubricant & similar oils	Animal feeds	Fatty acids	Other	Total Domestic Utilization
		(Million Pounds)								
1/1963	-	-	16	-	6	27	23	12	18	3/104
1962	-	-	68	-	2	25	36	19	7	156
1961	-	-	62	2	10	38	27	13	17	168
1960	-	-	33	-	15	37	25	2	41	153
1959	-	-	3	6	10	25	22	14	27	109
1958	-	-	12	-	18	-	-	-	82	112
1957	-	2/	11	-	21	-	-	-	97	129
1956	-	2/	14	-	18	-	-	-	103	135
1955	-	-	13	-	21	-	-	-	62	96
1954	-	2/	20	2/	2	-	-	-	60	83
1953	-	2/	31	2/	3	-	-	-	102	135
1952	-	-	32	1	3	-	-	-	129	165
1951	2	-	22	2	5	-	-	-	135	166
1950	8	1	21	4	8	-	-	-	140	182
1949	-	10	15	4	7	-	-	-	131	167
1948	-	35	37	5	8	-	-	-	87	132
1947	-	43	34	5	9	-	-	-	95	185
1946	1	40	36	5	7	-	-	-	81	170

1/ Less than 500,000 pounds.
2/ Factory consumption used for years in which factory consumption exceeds domestic disappearance.

over that of competing drying oils such as soybean, linseed, and tung oils.

U.S. production of menhaden oil dropped sharply in 1963 and monthly prices have been moving up rapidly (from 4.0 cents per pound in January 1963 to 8.5 cents in April 1964). World output of marine oils declined sharply in 1963, due primarily to the reduced Antarctic whale catch, and was at the lowest level since 1960. Production probably will be higher in 1964 than in 1963 and, if so, prices should recede somewhat.

Table 3 - Wholesale Prices of Menhaden Fish Oil Compared with Prices of Linseed, Soybean, Dehydrated Castor, Tung, and Oiticica Oils, 1961-1964 and Averages for 1956-60, 1951-55, and 1947-50

Year	Menhaden oil, crude, tanks, f.o.b. Baltimore	Linseed oil, raw, tank carlots Minneapolis	Soybean oil, crude, tanks, f.o.b. Decatur	Dehydrated castor oil, tanks, New York	Tung oil, domestic tanks, f.o.b. southern mills	Oiticica oil, liquid, tanks, New York
	(Cents Per Pound)					
1964:						
Jan.	8.1	13.3	8.1	25.1	29.1	32.0
Feb.	8.3	13.3	8.0	25.1	27.9	28.8
Mar.	8.4	13.3	8.1	25.1	26.5	19.0
Apr.	8.5	13.3	7.9	25.1	25.7	18.7
1963	6.2	12.7	8.9	25.1	36.9	28.4
1962	4.6	14.2	9.0	25.1	36.9	16.9
1961	6.2	14.2	11.5	25.0	27.6	14.1
Average:						
1956-60	7.9	13.5	10.7	25.9	22.4	16.8
1951-55	8.8	15.5	13.0	28.5	30.3	20.9
1947-50	13.2	25.2	17.6	26.2	23.8	22.6

OUTLOOK: The U. S. domestic marine oil industry (basically menhaden fish oil) still possesses considerable growth potential. Much depends upon research, both in maintaining a continued high menhaden catch and in better utilization of the oil and its derivatives. Utilization research efforts at present are mainly concerned with long-chained, polyunsaturated fatty acids in such areas as protective coatings, textile chemicals, lubricating oil additives, alkyd resins, plasticizers emulsifiers, aldehydes, and fatty alcohols.

Demand for fish meal probably will outweigh demand for fish oil as a consideration for a profitable fishing operation, although a favorable export market for the oil should exist. Domestic use of fish oil depends greatly upon maintaining a price advantage over that of competing vegetable oils. Finally, "new products" research offers possibilities in such fields as human food products, animal feeds, and other industrial uses. To a large degree, research in increased product utilization may hold the key to the future course of the industry. (Fats and Oils Situation, U. S. Department of Agriculture, May 1964.)

Maine Sardines

CANNED STOCKS, JUNE 1, 1964:

Canners' stocks of Maine sardines on June 1, 1964, were 37,000 cases less than those on hand June 1, 1963, but were 449,000 cases above stocks on hand two years ago on June 1, 1962 (the pack for the 1961 season was exceptionally small). On the other hand, distributors' stocks this June 1 were 39,000 cases more than on the same date in 1963.

On April 15, 1964, carryover stocks at the canners' level amounted to about 622,000 cases as compared with a carryover of 660,000 cases on April 15, 1963, and a carryover of only 33,000 cases on April 15, 1962, which was a short-pack year.

Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, June 1, 1964, with Comparisons 1/

Type	Unit	1963/64 Season: 6/1/64	4/1/64	1/1/64	11/1/63	1962/63 Season: 7/1/63	6/1/63	4/1/63	1/1/63	11/1/62	1961/62 Season: 7/1/62	6/1/62	4/1/62	1/1/62
Distributors	1,000 actual cases	254	291	261	308	217	215	264	271	230	134	99	148	193
Canners	1,000 std. cases 2/	499	658	1,063	1,255	643	536	699	1,092	1,348	374	50	45	144

1/ Table represents marketing season from November 1-October 31.
2/ 100 3¾-oz. cans equal one standard case.
Source: U. S. Bureau of the Census, Canned Food Report, June 1, 1964.

This year's Maine sardine packing season opened on April 15, 1964. Canners were getting ready to start operations as soon as sardines were sighted and landed. Only several hundred cases were reported packed as of early June. By July 11, a total of 211,000 cases (100 No. $\frac{1}{4}$ cans) had been packed, according to the Maine Sardine Council. The pack was much smaller than in the same period in 1963, when 445,000 standard cases were packed. Ample carryover stocks from the 1963 season caused a later start of intense fishing for the 1964 season. As of mid-July, fishing continued spotty with the heaviest sardine catches in the Rockland-Portland area.

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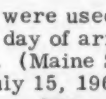
MAINE CANNED SARDINES SERVED AT NATIONAL BOY SCOUT JAMBOREE:

Maine sardines were again served to 50,000 Boy Scouts at their National Jamboree held at Valley Forge, Pa., during the week of July 20, 1964. It was the third consecutive time that they have been featured on the menu of this event which takes place every 4 years.

The cost of the sardines was shared by the Scout organization and the Maine Sardine Council. The Council furnished a specially designed can cover for the occasion.

The Council's Executive Secretary said, "We consider this an outstanding opportunity to sample Maine sardines to one of the largest gatherings of youngsters in the world and are gratified that the National organization again selected our product from the thousands of items available."

The sardines were used as a quick lunch item on both the day of arrival and departure for the campers. (Maine Sardine Council, Augusta, Me., July 15, 1964.)



Marlin

BILLFISH RESEARCH CRUISE BY UNIVERSITY OF MIAMI VESSEL:

To search the tropical Atlantic for the spawning grounds of the blue marlin was the objective of a group of about 10 scientists from the Institute of Marine Science, University of Miami, when they left on the Institute's research vessel John Elliott Pillsbury this past July. The biologists will work in the Gulf Stream and northeast into the Sargasso Sea surrounding Bermuda. Samples of planktonic and other marine life will be taken from the surface down to depths of two miles or more by means of plankton tows, midwater trawls, deep-water trawls, bottom trawls, and bottom dredges. Specimens will also be captured by night-lighting (using a submerged light to attract organisms which are dipped out in nets).

The billfish research, part of a long-range study of the distribution, migration, and growth stages of marlin and sailfish, involves a search for eggs, larvae, and juvenile fishes. Stomach contents of various large fish species are examined and other forms of marine life including squid, octopi, flyingfish, and dolphin will be collected for various other Institute of Marine Science projects. The aims of the cruise include the capture of missing size stages of blue marlin, capture of larval white marlin, and the discovery of centers of spawning activity. Investigators of the Institute's Billfish Research Program have already examined over 600 specimens of young marlin ranging to less than a quarter-inch in length. (Institute of Marine Science, University of Miami, July 19, 1964.)

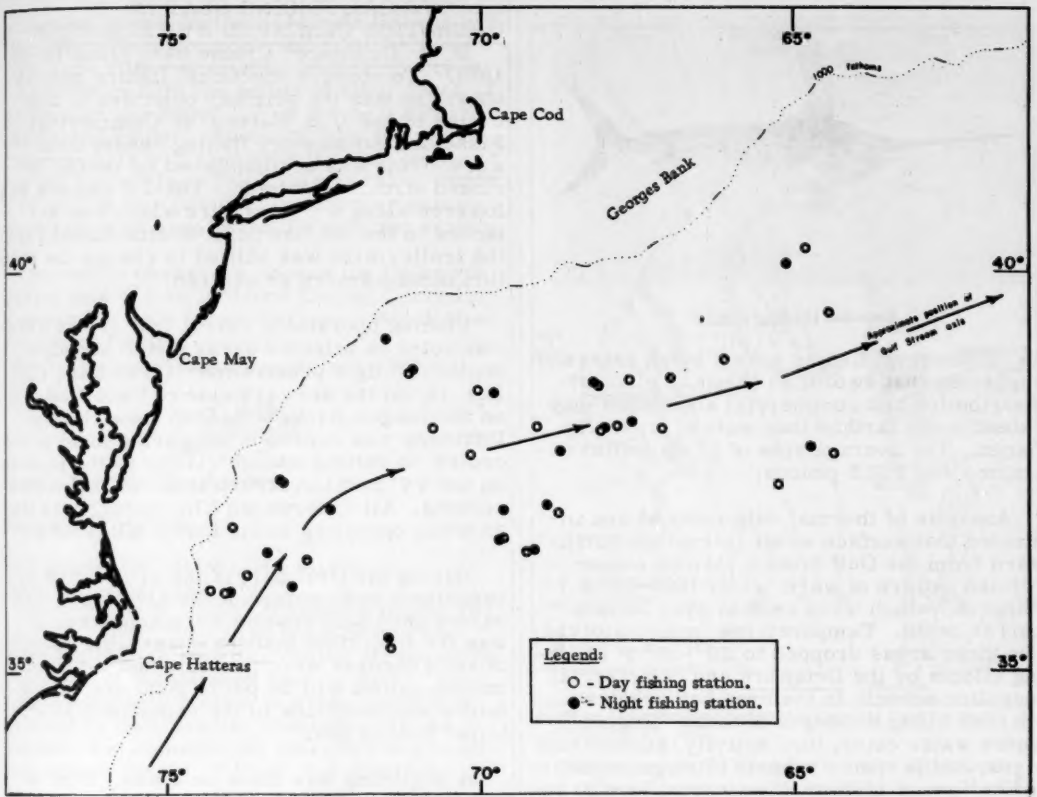
Note: See Commercial Fisheries Review, August 1964 p. 36; August 1963 p. 43.

North Atlantic Fisheries Exploration and Gear Research

TUNA AND SWORDFISH DISTRIBUTION STUDIES IN WESTERN NORTH ATLANTIC:

M/V "Delaware" Cruise 64-3 (April 17-June 4, 1964): The objectives of this cruise were to (1) continue a systematic survey of the seasonal distribution, abundance, and migration of tuna, and (2) investigate the occurrence of both tuna and swordfish in waters contiguous to those in which the annual appearances of those species support commercial fisheries. The exploratory fishing and gear research vessel Delaware of the U. S. Bureau of Commercial Fisheries operated in the western North Atlantic during this seven-week cruise south of New England and east of the Middle Atlantic States.

Night long-line sets were made at 13 stations, and day long-line sets at 26 stations



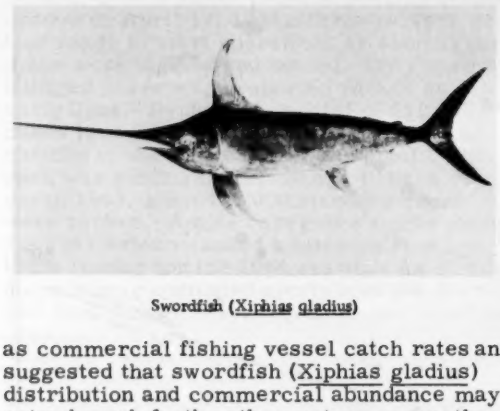
Area of operations during M/V Delaware Cruise 64-3, April 17-June 4, 1964.

during the cruise. Surface trolling gear was used between stations when weather and sea conditions permitted. Thermal transects using bathythermograph and surface thermograph data were coordinated with hydrographic information from previous investigations to determine positions of fishing stations.

Yellowfin tuna (Thunnus albacares) catches, both by the Delaware and commercial swordfish long-line vessels in the area, suggested a commercial abundance of that species along the frontal edges of the Gulf Stream from Cape Hatteras to east of Georges Bank (65° west longitude). A catch rate of 19 fish per 100 hooks 80 miles northeast of Cape Hatteras on May 19, 1964, is believed to be the highest long-line catch rate for that species in the western North Atlantic. Incidental catches by swordfish long-line vessels in the Cape Hatteras area showed similar high rates. Sightings of small groups of yellowfin tuna "finning out" at the surface were frequently seen and reported, and one 70-pound fish was caught on the vessel's troll gear. The average size of 147 yellowfin tuna examined during the cruise was 74.5 pounds.

Catches of bluefin tuna (Thunnus thynnus) were limited to very small numbers of medium and large fish (160-515 pounds). The few albacore (Thunnus alalunga) caught were also large (33-58 pounds); one 55-pound fish was caught on troll gear in 71° F. water. In addition, 27 big-eyed tuna (Thunnus obesus) (39-200 pounds), and one 14-pound skipjack (Katsuwonus pelamis) were caught on long-line gear.

United States and Canadian swordfish long-line fleets were fishing between the edges of the Continental Shelf and the Gulf Stream during much of the time. Swordfish catch rates during night long-line sets, both north and south of the Gulf Stream, were about the same



Swordfish (Xiphias gladius)

as commercial fishing vessel catch rates and suggested that swordfish (Xiphias gladius) distribution and commercial abundance may extend much farther than waters presently fished. The average size of 15 swordfish examined was 122.2 pounds.

Analysis of thermal data made at sea indicated that surface water intrusions northward from the Gulf Stream formed a convoluted pattern of warm water (60°-65° F.) "fingers" which were seldom over 20 fathoms in depth. Temperatures immediately below those areas dropped to 50°-45° F. Fishing efforts by the Delaware and commercial long-line vessels in the area had greatest success along the edges of those "fingers" where water color, bird activity, surface bait signs, and porpoise schools often gave good indications of increased biological levels.

In cooperation with other agencies, 110 tuna, 4 marlin, and 62 sharks were tagged and released with dart tags. Blood samples of tuna and other species were collected for serological analyses by the subpopulations program at the Bureau's Biological Laboratory in Honolulu. Other data collected and examined included lengths, weights, stomach contents, and sexual condition of all fish taken aboard the vessel. Dip net-night light collections and drift plankton tows were made as time allowed. Other long-line catches of particular scientific note were one specimen of the longbill spearfish (Tetrapturus pfluegeri) and one specimen of the gempylid (Lepidocybium flavo-brunneum).

The Delaware's three-part cruise was broken by port calls at Norfolk, Va., April 29 and May 14, to rebunker the vessel and exchange visiting personnel.

Note: See Commercial Fisheries Review, February 1964 p. 37; August 1963 p. 36; June 1963 p. 38.

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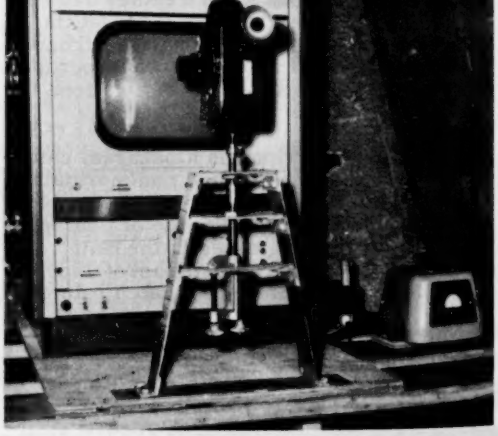
ELECTRICAL FISHING GEAR IN OPERATION OBSERVED BY TELEVISION: M/V "Delaware" Cruise 64-4 (June 18-30, 1964): To observe electrical fishing gear in operation was the primary objective of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. This was accomplished by means of closed circuit television. The TV camera was lowered along a trolley wire which was attached to the net; the point of attachment for the trolley wire was shifted to change the position of the camera as desired.

Fishing operations during this cruise were conducted in selected areas and at suitable depths for light penetration: (1) in Cape Cod Bay, (2) on the seaward side of Cape Cod, (3) on Stellwagen Bank, and (4) in Ipswich Bay. Difficulty was experienced, during most of the cruise, in getting enough clarity to the picture on the TV monitor screen to permit film recording. All underwater film footage was taken while operating in the Ipswich Bay area.

During the first part of the cruise, the arrangement and number of the electrodes was varied until best results were achieved. It was the first time that the observable results of such changes were possible and the information gained will be put to good use during future modifications to the experimental electrical fishing gear.

A beginning was made on a study film of the electrical fishing method. Most of the fish



TV monitor and camera control unit used on M/V Delaware Cruise 64-4. A 16 mm. movie camera is positioned before monitor screen to make kinescope recordings.

occurring in the depths and areas fished were flat fish. Other commercially-valuable species were either scarce or absent. Successful efforts to film the action of other types of groundfish are hoped for on the next electrical fishing cruise. Adequate film footage of those species will complete the requirements for the study film. The film was taken with a 16 millimeter camera; underwater scenes were taken by filming the TV monitor screen.

Scientific observers aboard the Delaware during this cruise included Doctor Conradin Kreutzer, a well known German specialist on electrical fishing.

Note: See Commercial Fisheries Review, January 1964 p. 21.

North Pacific Exploratory Fishery Program

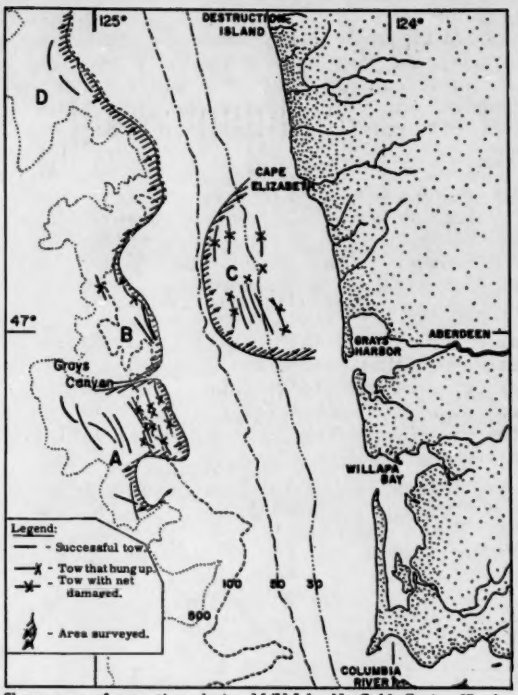
BOTTOMFISH TRAWLING SURVEY OFF WASHINGTON COAST:

M/V "John N. Cobb" Cruise 65 (April 16-May 28, 1964): The objectives of this six-week bottomfish trawling cruise off the southern coast of Washington State were to: (1) locate trawlable bottom in areas presently avoided by commercial trawlers, and (2) evaluate the commercial potential of groundfish inhabiting any of those new grounds.

The general region surveyed by the U. S. Bureau of Commercial Fisheries exploratory and gear research vessel John N. Cobb during this cruise was along the Washington coast from Destruction Island to Willapa Bay. Within that region there are two areas that are not extensively fished by commercial otter trawlers due to the generally uneven or rocky nature of bottom. One of the areas includes bottom at depths from 100 to 300 fathoms throughout the entire region, and the other is located between Cape Elizabeth and Grays Harbor in 25 to 50 fathoms of water.

Soundings were first made over the areas with recording echo-sounding equipment to determine the feasibility of trawling. When even and soft bottom were found, test drags were made with a snag chain or a net rigged with a snag cable.

Four areas were surveyed on this cruise: (1) south of Grays Canyon from 80 to 380 fathoms, (2) north of Grays Canyon from 80 to 200 fathoms, (3) between Cape Elizabeth and Grays Harbor in 25 to 50 fathoms, and (4) west of Destruction Island from 100 to 360 fathoms.



Shows area of operations during M/V John N. Cobb Cruise 65, April 16-May 28, 1964.

The grounds surveyed south of the Grays Canyon were trawlable in waters deeper than 280 fathoms. Catches were dominated by sablefish which ranged from 364 to 612 pounds of fish per hour of trawling. Between 80 and 280 fathoms, many snags were encountered which resulted in badly torn nets. Two successful one-hour tows were made in 110 fathoms with one of them yielding 3,300 pounds of Pacific ocean perch.

Although the grounds north of Grays Canyon were mostly untrawlable as determined by echo-soundings and exploratory tows, four successful drags were made. The catches from those grounds were small, ranging from 490 to 740 pounds of mixed species (mostly rockfish and flounder) per hour of trawling.

The grounds between Cape Elizabeth and Grays Harbor were found to be flat with scat-

terings of small boulders and outcroppings of shale present which caused damage to nets on most of the exploratory drags. Four successful one-hour tows were made in the southern portion in 25 to 36 fathoms of water. Catches ranged from 530 to 680 pounds of mixed species, predominantly flounder and lingcod.

Three one-hour drags were added during the present survey to the grounds west of Destruction Island where surveys were initiated by the Bureau in 1962. Two of those three drags yielded good catches of sablefish and Dover sole (2,900 and 550 pounds per hour, respectively).

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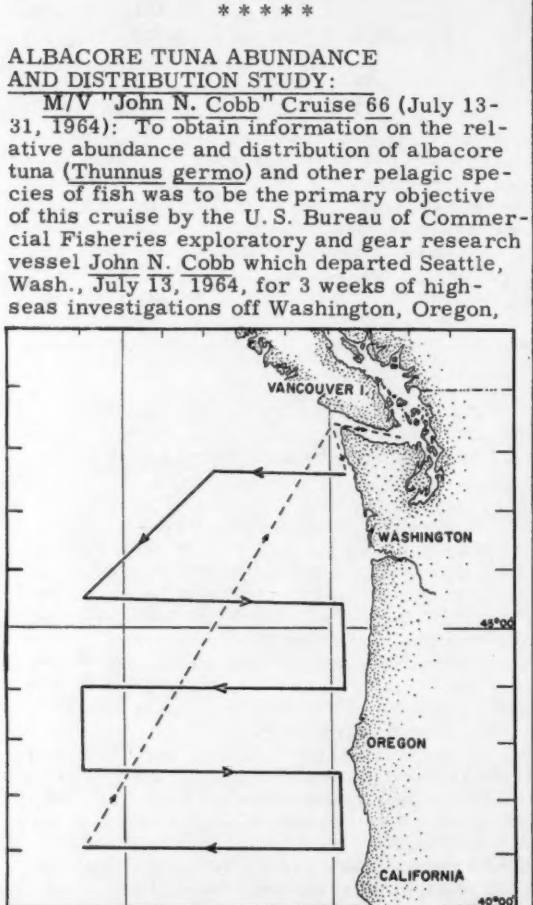
ALBACORE TUNA ABUNDANCE AND DISTRIBUTION STUDY:

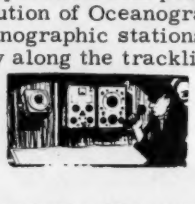
M/V "John N. Cobb" Cruise 66 (July 13-31, 1964): To obtain information on the relative abundance and distribution of albacore tuna (Thunnus germo) and other pelagic species of fish was to be the primary objective of this cruise by the U. S. Bureau of Commercial Fisheries exploratory and gear research vessel John N. Cobb which departed Seattle, Wash., July 13, 1964, for 3 weeks of high-seas investigations off Washington, Oregon, and California. The explorations were to extend from 40°-48° N. latitude in an area about 30 miles off the coast seaward to 131° W. longitude (see chart for trackline). Oceanographic data, including salinity, oxygen, and chlorophyl determinations were also to be obtained during the survey.



Shows scheduled trackline during Cruise 66 of the research vessel John N. Cobb, July 1964.

Trolling with tuna jigs was to be conducted along the trackline between oceanographic stations. When possible, captured albacore were to be tagged, measured, and released. Albacore unsuitable for tagging were to be prepared for biochemical and microbiological studies. Information on albacore catches were to be broadcast by radio daily to the commercial fishing fleet.

Night-light stations were to be occupied for observations of marine life and forage organisms. In cooperation with personnel from Scripps Institution of Oceanography (La Jolla), standard oceanographic stations were to be occupied daily along the trackline.



Nutrition

FISHERY PRODUCTS REAFFIRMED AS NUTRITIOUS AND HEALTHFUL:

A statement on fats and oils was issued by the American Heart Assocation. It reaffirms that Association's stand on the importance of polyunsaturated fats (such as found in fish) in human foods.

The Association's statement declared that reducing the amount of calories in the diet by decreasing the consumption of saturated fat will not only help prevent obesity but will actually lower blood cholesterol as well. This confirms statements such as those of Dr. Lawrence W. Kinsell, Institute for Metabolic Research, regarding "Fish Fats, Blood Fats and Atherosclerosis:" He said, "Since men are more prone to early development of the complications associated with atherosclerosis, such as heart disease and strokes, it behooves the good housewife, who wishes to help keep her husband's arteries in good condition, to plan new and intriguing ways of preparing fish and to serve seafoods frequently in the weekly diet."

Many factors influence the development of heart disease, and the American Heart Association has emphasized that people should seek medical guidance in making changes in the fat content of their diet. On the other hand, the Association has pointed out, "evidence from many countries suggest a relationship between the amount and type of fat consumed, the amount of cholesterol in the blood and the reported incidence of coronary artery disease."

As Dr. Fedrick Stare, Chairman of the Department of Nutrition, Harvard University, has emphasized, "Fish as compared with most other high-quality protein foods are generally low in fats, and the fat that is present in fish has a generous proportion of the polyunsaturated fats."

Fish and seafoods have always been considered excellent sources of complete and well-balanced protein and minerals--all of which are necessary to health and a feeling of well-

being. It is becoming increasingly evident that the polyunsaturated fats in the foods from our oceans, rivers, and lakes will lower blood cholesterol, the number one suspect in the type of hardening of the arteries responsible for most heart attacks and strokes.

Oceanography

INDIAN OCEAN INVESTIGATIONS BY RESEARCH VESSEL "PIONEER":

The world's steepest continental slope has been discovered off the east coast of Ceylon by the U. S. Coast and Geodetic Survey research vessel Pioneer, announced the Department of Commerce on July 12, 1964. The chief scientist aboard the research vessel reported that the slope where Ceylon drops down into the Bay of Bengal is over 45 degrees steep. The average continental slopes vary between 5 degrees off the west coast of Europe, 1 to 15 degrees off the Pacific Coast of the United States, and 4 to 7 degrees off the American east coast.

The Pioneer was completing a six-months, 27,000-mile voyage to the Indian Ocean, scientifically one of the world's least known ocean areas. The vessel, described as a completely equipped "floating laboratory," left San Francisco, Calif., on February 11, 1964, to participate in a 20-nation scientific exploration of the Indian Ocean. Scientists from the Philippines, Malaysia, India, Indonesia, and 8 United States scientific agencies were aboard the vessel during the voyage.

The research vessel, which is manned by 104 officers and crew, was scheduled to reach Honolulu, Hawaii, about the end of July on its return trip to the United States and San Francisco-Oakland about mid-August. It will then have completed the longest and farthest trip ever made by a vessel of the Coast and Geodetic Survey in its 157-year history.

In addition to discovering the steep continental slope off Ceylon, other discoveries and activities of the expedition included (1) the finding of several previously unknown undersea mountains; (2) explored for the first time two giant submarine canyons off Ceylon both of which are larger than the Grand Canyon; (3) sent SCUBA divers down to search the top of another undersea mountain; and (4) took thousands of color photos of the bottom of the sea.

The Coast and Geodetic Survey's chief oceanographer, who headed the scientific expedition and flew back to report on its findings, termed the continental slope off Ceylon "truly spectacular." He said, "The west coast of Ceylon is connected with India by a very shallow area. It was known that deep water existed off the east coast, but no one realized how precipitous was the drop from the continental shelf (which begins at the water's edge) to the ocean bottom." He explained that the continental slope is the connecting link between the shelf and the bottom of the sea. He continued, "From about 6 miles off the coast, where we began our soundings, the slope fell from a depth of about 180 feet to about 12,000 feet in the short distance of 18 miles. Nearly 4,000 feet of this vertical drop to the sea bottom off Ceylon was over 45 degrees." "The steep slope is located about 20 miles south of Trincomalee and is about 2 miles long", he said.

The 2 submarine canyons which were explored off the Ceylonese coast were near Batticoloa. The larger, just north of Batticoloa, was 7,800 feet deep and was named Mundeni Canyon for the river closest to it. It was said to be deeper and narrower than the Grand Canyon. The second undersea canyon is located south of Batticoloa and is 2 miles wide at the top and 4,570 feet deep.

According to the oceanographer, one of the most unusual aspects of the trip, was their exploration of an undersea mountain in the South China Sea about 36 to 40 feet below the surface of the ocean. Millions of brightly colored tropical fish swam around them as they made their way over the white coral which covered the top of the mountain. Rock was recovered from the top and sides of the mountain and numerous color photos made of the area with the expedition's underwater cameras.

During the remainder of the expedition, the research vessel Pioneer was slated to explore some of the Pacific's most mysterious phenomena, the huge trenches, such as the Java, Philippines, Marianna, Palau, and Yap Trenches, at the ocean bottom. "They are all much larger than the Grand Canyon," explained the vessel's chief oceanographer. "They are large narrow gashes in the bottom of the sea and their origin is still in the realm of theory. We do not know what caused them. There is nothing like them anywhere on land, so we can only study them at sea. Very possibly they represent areas where the earth's crust has

actually been pulled down by forces acting deep within the earth. We hope the expedition will be able to shed some light on the origin of these tremendous sea-floor trenches."

The great wealth of scientific material collected on the expedition, which included a study of the Indian Ocean's physical, chemical, meteorological, geological, biological, and geophysical aspects, will take scientists years to assimilate completely. A preliminary report of the expedition, is to be made available in early 1965. (U. S. Coast and Geodetic Survey, July 12, 1964.)

Note: See Commercial Fisheries Review, March 1964 p. 23.

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UNIVERSITY OF MIAMI RESEARCH VESSEL RETURNS FROM EQUATORIAL ATLANTIC OCEANOGRAPHIC INVESTIGATIONS:

Extensive oceanograph investigations were conducted by the research vessel John Elliott Pillsbury of the Institute of Marine Science (IMS), University of Miami, during the first part of this year. The 176-foot vessel returned to Miami in June 1964, from five months at sea, after covering 18,600 miles during a series of investigations along the equator and along the west coast of Africa.

With a crew of 19 and a scientific complement of 15, the vessel left Miami on February 1, 1964, and sailed through the Bahamas and south to St. Thomas, Virgin Islands, doing radiation studies. From St. Thomas she crossed the Atlantic to Monrovia, Liberia, arriving there on February 28. For the next 2½ months she participated in EQUALANT III, a 10-nation oceanographic survey of the tropical Atlantic. The vessel's work was concerned with one of the major objectives of the survey--an attempt to track the equatorial undercurrent, a little-known current that flows east along the Equator, beneath the westward-flowing equatorial current. The scientists succeeded in tracking the underwater current for a distance of 1,320 miles to an area where the current dissipated itself along the African coast. The existence of the current, which is located about 150 feet below the surface, has been known to oceanographers for several years, but little or nothing has been known of its course, speed, or point of termination.

At the conclusion of the study of ocean currents in April, the Pillsbury took on a new group of IMS scientists at Lagos, Nigeria. A study was made of the Gulf of Guinea, a unique ocean region where a combination of currents produces an area of high primary productivity near a fairly sterile region. The chemistry of the water and its plankton were studied--tiny plants, animals, and bacteria. After all data have been analyzed the investigators hope to reach conclusions concerning the reasons for the extraordinary growth of life in certain areas of ocean upwellings.

The next and last phase of the vessel's African cruise was a deep-sea biological expedition. Using bottom trawls of various kinds, midwater trawls, dredges, and grabs in depths of from 90 to 12,000 feet, and using over 6 miles of wire cable, thousands of specimens of deep-ocean and continental-shelf life were collected. Those will be studied to investigate the relationships of the fauna of the eastern and western tropical Atlantic. Many species were taken that are new to science.

Many unusual deep-water fish species were collected, including a black swallower (which can swallow another fish twice its size); the famous fish with the "tricycle landing gear" which was photographed a few years ago from a bathyscape; a barreleye (a fish with eyes in tubes pointed forward like headlights); others known as fang-tooth, snipe-eel, and viperfish. Six rare gulper eel also were caught--more than are found in all the world's museums.

Among the invertebrates collected were a number of species of the rare vampire squid, the poisonous pancake urchin of deep water, numerous cuttlefish, squid and deep-water gelatinous octopods, strange deep-sea crustaceans, brittlestars, sea cucumbers, deep-water tooth shells, and other kinds of animals. The results of the expedition are being prepared and will be a valuable contribution to the knowledge already at hand of tropical and deep-water ocean life.

Commissioned in July 1963, the John Elliott Pillsbury had logged 254 days and 36,000 miles at sea at the end of this equatorial Atlantic trip. About mid-July, she was scheduled to depart on a cruise in the waters between Bermuda and the Bahamas. (News of Institute of Marine Science, Miami, Fla., July 1, 1964.)

Note: See Commercial Fisheries Review, August 1963 p. 43.

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COAST GUARD CUTTER OCCUPIES OCEAN WEATHER STATION:

The long-range program of the U. S. Coast Guard for the full utilization of the oceanographic potential offered by the weather stations moved one step further towards realization when the USCGC Ingham occupied Ocean Station CHARLIE during June 13-July 3, 1964. The Ingham has been outfitted to take routine oceanographic stations, and will be the first of the 327-foot Secretary-Class cutters to undertake a full-scale oceanographic program. She was to be followed at CHARLIE by her sistership the USCGC Spencer in July and August 1964.

Ocean Station CHARLIE is located at 52° 45' N., 35°30' W., or about 500 miles southeast of Cape Farwell, Greenland, on the summer shipping lanes between Cape Race, Newfoundland, and Bishop's Rock, England. More significantly from an oceanographic point of view, it is located in the transition zone between the warm waters of the North Atlantic Current and the cold outflow from the Arctic region.

As in the case of the first project at Station BRAVO, the first surveys will be largely exploratory, since there is very little historical data available on which to base a sampling plan. The initial program will consist of daily oceanographic casts to 1,500 meters, with a cast to the bottom (about 3,500 meters) about every 10 days.

The data will be processed by the Coast Guard Oceanographic Unit, Washington, D. C., and the results published in the U. S. Coast Guard Oceanographic Data Report Series. The final data will be deposited with the National Oceanographic Data Center, as are the data from all Coast Guard cruises. (U. S. Coast Guard Oceanographic Unit, Washington, D. C., June 15, 1964.)

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NEW INSTRUMENT EFFECTIVE AID IN OCEAN-BOTTOM STUDIES:

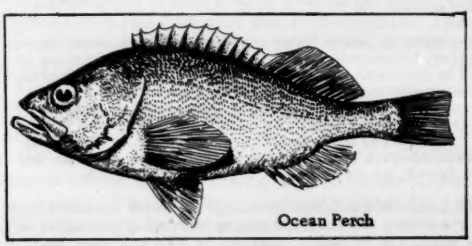
A large bucket-type grab sampler is the principal instrument used in collecting bottom-dwelling animals and related bottom sediments on the Continental Shelf off the North Atlantic seaboard. It is used in that area in a bottom-dwelling fauna study being conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass., in cooperation with the Woods Hole Oceanographic Institution and the U. S. Geological Survey.

The instrument is made of thick steel plate, measures over 3 feet in its greatest dimension, weighs 550 pounds, and samples a 6-square-foot bottom area. A unique feature of the instrument is a camera and strobe light mounted within the bucket which takes a photograph of the bottom immediately before the device touches bottom. The combination of both photographs and bottom samples for the same spot has aided immeasurably in determining the abundance of animal life on various parts of the Continental Shelf, as well as mapping sediment types, and determining the living habits of various deep-sea creatures.

Ocean Perch

ANNUAL CHECK OF TAGGED OCEAN PERCH OFF MAINE:

A total of 400 fish were taken during the annual checkup in June 1964 of tagged ocean perch off Eastport, Me. The annual check is part of the North Atlantic fisheries investigations program of the U. S. Bureau of Commercial Fisheries on the growth rate of ocean perch. Of the 400 fish taken, 200 had been tagged previously and 16 were tagged in August 1956.



Ocean Perch

Some of the tagged fish taken in this year's check have been recaptured in the same place several times in past years. Out of the 16 fish tagged in August 1956, 15 were recaptured at least twice before, and 1 fish was recaptured 5 times. The average growth of those 16 fish for the 8-year period was barely 1.5 inches.

This project by the Bureau started as an investigation of the growth rate of ocean perch, and has been successful in providing scientific knowledge on ocean perch longevity and

their lack of movement away from even a very restricted locality.

Oysters

DEVELOPMENTS ON MSX DISEASE REPORTED BY SCIENTISTS:

Oyster grounds in the Chesapeake Bay area attacked by MSX have not yet recovered, and oysters planted on infected grounds continue to die. This is what the Senior Marine Scientist in charge of oyster research at the Virginia Institute of Marine Science, Gloucester Point, Va., told the members of the Oyster Institute of North America at their annual convention in New Orleans, July 10, 1964.

The scientist said that "For 5 years the protozoan disease (MSX) has been epidemic in saltier waters of lower Chesapeake Bay and our rivers, and it has not yet subsided. We have marked the areas invaded by MSX and the disease has not spread appreciably beyond the fringes of these boundaries during several years." He pointed out that MSX is inhibited by low salinities and disappears each spring from marginal areas due to freshening of the waters by runoff of the spring rains. Although the boundaries of the disease have not been widened, no clear evidence of recovery from the invasion can be detected.

Test plantings of seed oysters by Institute of Marine Science scientists indicate that oysters planted on MXS-infested grounds during the winter or early spring will become infected as the water warms up and will begin to die in late summer and fall with a few deaths occurring throughout the winter. Seed oysters planted in infested areas in late summer become infected immediately but do not begin to die until the following summer. About 40 percent of the oysters planted will die the first summer and 50 to 60 percent will die the second summer. Only about 10 to 20 percent of the original seed oysters planted will remain alive after 2 years. According to the Director of the Institute, Virginia's scientists hope to make use of those survivors in developing resistant strains.

Infections of James River seed oysters have never been extensive, fortunately for the oyster planters. Infections detected in the lower seed beds in the fall disappear by spring as fresh water pushes the salt content lower than the disease organism can tolerate. Plantings of James River oyster seed, even when carrying MSX, have not spread the disease to new areas since those seed were usually planted in rivers and bays where the water contains less salt than the lower James, so the causative organism was killed.

The Institute's scientist in charge of oyster research and his co-workers are busy attempting to develop strains of oysters which will be highly resistant to MSX and other diseases. Oysters which have survived the ravages of MSX for 5 years are being artificially spawned in the Gloucester Point Laboratory and if they show a resistance to the disease, they will eventually be made available to oyster farmers. Testing for resistance to MSX will require a minimum of 3 years even under present accelerated operations. (Virginia Institute of Marine Science, Gloucester Point, July 14, 1964.)

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BREEDING STOCK RESISTANT TO DISEASE:

Excellent progress is being made in spawning and raising oysters under controlled conditions, announced the Director of the Virginia Institute of Marine Science, Gloucester Point, Va., on July 20, 1964. He said, "This is an important step in our efforts to produce oysters resistant to disease. As further capabilities are developed, we can look to the day when improved stock, not only of oysters but also of clams, can be produced and manageable mariculture for seafoods will be a reality."

The oyster improvement program at the Virginia Institute of Marine Science is aimed specifically at breeding a special stock of oysters which will survive the protozoan disease MSX. Parents of those oysters are males and females which have survived 5 years in beds where 95 to 98 percent of their fellow oysters succumbed to the disease.

The Senior Marine Scientist in charge of oyster research at Gloucester Point obtained large oysters which have lived most of their lives in disease-infested waters to be the parents of what he hopes will become brood stock highly resistant to MSX. "During late winter we hired a commercial dredge boat and collected live oysters from Mobjack Bay and Egg Island beds which are assumed to have survived the ravages of MSX for 5 years," he related. "Perhaps 95 to 98 percent of the oysters left on those grounds in 1959 have died from MSX infections. We hope these survivors have a natural immunity to the disease and we are testing to see if seed oysters spawned from these survivors will have higher natural resistance to MSX than James River seed," he added.

Laboratory and field work necessary for testing the survival value of these specially selected oysters requires a team effort. One of the Institute's oyster research scientists has devoted many months to studying techniques for caring for larval oysters and has incorporated the principles he has learned into the equipment of a new oyster research laboratory completed in June of this year. Even before completion of the new research laboratory, he began to successfully spawn oysters in early May and by mid-July had collected spat from many spawnings.

Another group of laboratory scientists is responsible for growing the algae (plankton) necessary to feed the young laboratory-reared oysters. A scientist of the Philadelphia College of Pharmacy and Science has been associated with the Institute this past summer in working out problems of the embryonic development of oysters. He is a visiting sci-

entist at the Virginia Institute of Marine Science under the National Science Foundation Research Participation for College Teachers program.

About 20 lots of surviving oysters from MSX and Dermocystidium epidemics have been collected for breeding. Nine lots of laboratory-bred progeny, about the size of a small coin, were available for testing purposes. It will require about 3 years to determine whether or not this progeny is of a quality suitable for commercial purposes. If resistant stocks are obtained, breeding lots of a few bushels will be available to private commercial hatcheries for production. Selection for size, growth rate, and fattness will be made concurrently with resistant studies. Native stocks should be given strong preference in any breeding program, the Institute's oyster research scientists state. (Virginia Institute of Marine Science, July 20, 1964.)

Pacific Northwest

JAPANESE FISHERY OBSERVERS VISIT UNITED STATES:

A Japanese Fishing Industry Goodwill Mission to the United States and Canada arrived in Seattle, Wash., on July 17, 1964, for a six-day tour of Pacific Northwest fishery facilities. The 12 members of the group represent both management and labor organizations in Japan's fishing industry.

The Regional Director, U. S. Bureau of Commercial Fisheries, Seattle, Wash., said the Japanese group was scheduled to visit Columbia River fishery facilities in Washington and Oregon, and commercial fish operations and other installations in the Seattle area. After the United States visit, the Japanese mission was scheduled to go to Vancouver, British Columbia, Canada. Before coming to Seattle, the group had visited several places in Alaska. The group had left Japan on July 1 and arrived in Anchorage, Alaska, on the same day. They were scheduled to return to Japan on July 28.

Pollution

PESTICIDE ENDRIN BLAMED IN MISSISSIPPI RIVER FISH KILL:

An official finding that the pesticide endrin was the cause of a massive fish kill in the lower Mississippi River last fall and winter and that industrial operations at Memphis, Tenn., were sources of the pollution was announced June 26, 1964, by the Secretary of the U. S. Department of Health, Education, and Welfare. The finding took the form of the Secretary's acceptance of the report of a conference held at New Orleans, La., May 5-6, 1964, under the enforcement provisions of the Federal Water Pollution Control Act.

On the two principal points involved--the specific cause of the fish kill and the source of the pollution--the report of the New Orleans conference stated:

"The conferees representing the States of Louisiana and Mississippi and the U. S. Department of Health, Education, and Welfare concluded that the pesticide endrin was responsible for the fish kill in the Mississippi and Atchafalaya Rivers, in Louisiana, during the fall and winter of 1963-64. The conferee representing Arkansas stated that endrin was at least a contributing factor. The conferee representing Tennessee stated that other factors might also be present.

"Industrial wastes and drainage from contaminated areas in and near Memphis, Tenn., are sources of the discharge of endrin into the Mississippi.

"The available data demonstrate that sources, not yet identified, other than those in the Memphis area, may contribute to the endrin found in the lower Mississippi drainage area. These other sources must be identified through further study."

The report stated that minute concentrations of endrin had been found in the treated water supplier of Vicksburg, Miss., and New Orleans, La. "While acute effects on humans of this pesticide in water have not been detected," the report said, "the effects of continued ingestion of even these minute quantities must be evaluated."

In transmitting the report to water pollution control officials of the four States involved, the Secretary of the U. S. Department of Health, Education, and Welfare endorsed

the recommendations of the conference that action be taken to bring known sources of endrin discharges from industry, land drainage, and mud deposits under control "immediately" and that "other sources of endrin pollution be identified and brought under control as soon as possible." The conferees also called for the establishment of a technical committee "to direct and advise in the identification and abatement of all sources of pollution affecting the main stem of the Lower Mississippi" and for a progress report to be prepared within a year. (Public Health Service, U. S. Department of Health, Education, and Welfare, June 26, 1964.)

Salmon

NEW FISH BEHAVORIAL FLUME BUILT IN PACIFIC NORTHWEST:

A fish behavorial flume on the Grande Ronde River five miles upstream from Troy, Oreg., was completed and operating successfully at the beginning of this past summer, announced the Regional Director, U. S. Bureau of Commercial Fisheries, Seattle, Wash., on July 1, 1964.

The flume was built by the Bureau as part of its fish-passage research program in an effort to preserve and enhance anadromous fish runs in the Columbia River and its tributaries. The program is being conducted in cooperation with the State fishery agencies of Washington, Oregon, and Idaho. Scientists hope the flume will help them find new ways to collect young salmon and steelhead heading downstream to the ocean so they can be passed around dams and other barriers.

The Grande Ronde flume is the largest of several the Bureau either has built or is building in the Pacific Northwest. Already constructed are flumes at Carson National Fish Hatchery in Washington State, Eagle Creek (near Estacada), Oreg., and on an irrigation diversion of the Umatilla River in Oregon. The Grande Ronde flume cost $378,000 to build and is a concrete and steel structure placed in the river to test various kinds of experimental fish guiding and collecting devices.

The research biologist and project leader for the research program in Portland said one of the devices likely to be tested in the flume is a velocity accelerator barriers. It would consist of a series of concrete weirs in the bottom of the flume which would cause the water to accelerate as it passes over each one, but also slow up in between each weir. As the young fish migrating downstream encounter the accelerated flow, they seek to avoid it. The weirs, placed on a long angle to the direction of flow, create a velocity barrier extending in the same direction. The fish (on rejecting this speedup in flow) will, it is hoped, be guided along the flow barrier into a bypass situated on the far side of the flume. There they can be collected for transportation around any manmade obstruction. This device was designed at the University of Washington hydraulics laboratory and was to be tested first at the smaller flume at Carson Hatchery. If it showed promise there, it was to be tested at Grande Ronde.

The research biologist at Portland said, "What we are looking for is a method of collecting fish that is less costly from the standpoint of maintenance as well as capital outlay than the traditional methods of louvers and traveling screens. One of the problems is to design a collecting device which will allow debris in the river to pass through it, yet will not harm the fish or allow them to escape. It is hoped the Grande Ronde flume will help provide an answer."

Also being tested in the flume were a louver structure and a perforated plate screen to determine their efficiency in guiding young migrant fish.

Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, JUNE 1964:

Item and Period	1964	1963	1962	1961	1960
	. . . (1,000 Lbs. Heads-Off) . . .				
Total landings, So. Atl. and Gulf States:					
August	-	19,769	12,340	10,944	20,441
July	-	16,291	12,294	10,500	21,746
June	11,000	13,134	11,309	8,233	12,427
May	8,400	10,206	6,186	5,276	6,335
January-April	19,694	16,043	14,652	17,521	18,013
January-December	-	138,254	105,839	91,395	141,055
Quantity canned, Gulf States 1/:					
August	-	3,121	1,355	1,080	4,427
July	-	3,726	3,561	2,793	5,802
June	3,300	5,234	4,913	3,438	6,920
May	1,150	3,831	1,794	1,208	1,461
January-April	684	947	831	317	553
January-December	-	29,488	23,322	14,500	28,394

(Table continued on next page.)

Item and Period	1964	1963	1962	1961	1960
	(1,000 Lbs. Heads-Off)				
Frozen inventories (as of end of each mo.) 2/:					
August 31	-	24,803	12,754	12,728	20,171
July 31	-	25,460	13,677	14,849	17,397
June 30	-	24,047	13,796	19,416	15,338
May 31	28,082	24,053	13,904	24,696	17,540
April 30	28,950	24,954	15,637	27,492	20,502
March 31	31,428	27,970	16,607	31,345	23,232
February 29	35,303	28,039	19,012	37,612	29,063
Imports 3/:					
August	-	8,598	7,381	6,743	6,407
July	-	11,002	8,265	6,635	7,319
June	-	9,439	9,397	8,065	8,932
May	-	11,110	11,020	8,278	9,902
January-April	50,625	49,937	43,383	40,825	32,531
January-December	-	151,530	141,103	126,268	113,418
	(¢/lb., 26-30 Count, Heads-Off)				
Ex-vessel price, all species, So. Atl. and Gulf Ports:					
August	-	59.0	83.6	66.1	52.0
July	-	63.5	82.1	55.8	54.6
June	4/60-72	77.0	84.4	53.7	64.1
May	4/58-68	80.9	83.7	52.8	62.9
April	4/57-61	83.6	82.2	55.4	60.6
March	4/57-61	85.5	80.9	56.0	56.3
February	4/57-62	85.7	78.9	53.5	51.8
Wholesale price, froz. brown (5-lb. pkg.), Chicago, Ill.:					
August	-	75-81	110-112	76-91	64-67
July	-	77-97	-	70-75	72-77
June	80-85	95-102	102-104	67-72	76-77
May	72-83	100-103	96-103	67-69	74-77
April	71-74	100-105	94-97	69-70	74-75
March	72-75	102-106	94-95	69-71	65-68
February	73-82	102-106	93-95	69-71	65-67

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 30.3.
2/Raw headless only; excludes breaded, peeled and deveined, etc.
3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
4/Range in prices at Tampa, Fla.; Morgan City, La., area; Port Isabel and Brownsville, Texas, only.
Note: June 1964 landings and quantity used for canning estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.

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ROYAL-RED SHRIMP FISHING OFF FLORIDA EAST COAST GOOD IN JUNE:

Fishing for royal-red shrimp off the Florida east coast during June 1964 and the early part of July was reported to have averaged about 50 boxes of shrimp a week per vessel. One four-day trip by a commercial shrimp fishing vessel was reported to have yielded some 83 boxes of royal-red shrimp.

Smoked Fish

STATUS REPORT ON SMOKED FISH PROCESSING STUDIES IN GREAT LAKES REGION:

The progress on smoked fish processing studies to test the effects of certain process time/temperatures for the production of smoked fish is outlined in a report issued May 12, 1964, by the Regional Director, U. S. Bureau of Commercial Fisheries, Ann Arbor, Mich. The studies are being conducted at the Bureau's Great Lakes Technological Laboratory in Ann Arbor.

It has been evident for some time that industry lacked technical knowledge of the variables of existing smoked fish processing methods and the devices necessary to measure temperature of fish during smoking, as well as the equipment which would permit close control of the smoking operation. Data are needed to determine whether smoked chub processed and/or stored as specified by the various regulatory agencies would be an acceptable product. Processing studies are, therefore, being carried out to provide such information. An interim report on experimental smoking of chub has been released. This report was limited to results of current thermal processing studies. It did not include microbiological evaluations. Such research is in progress under contract and will be reported separately. The following tentative conclusions stemmed from current studies:

1. Chub can be heated to an internal temperature of 180° F. for 30 minutes in a direct smoking process and yield an acceptable product of good texture.

2. A large heat capacity (greatly in excess of existing commercial smokehouses in the Great Lakes area) is required to bring the internal fish temperature to 180° F. within a reasonable period of time. Rapid heating is necessary to insure a good yield and to avoid excessive drying of product.

3. Smokehouse temperature is not fish temperature. If rapid heating of the product is to be achieved (less than 3 hours), an initial temperature differential of at least 70° to 100° F. (of house over fish) is needed. This differential should not decrease to less than 50° to 60° F. at the end of a normal smoking period.

4. Slow, prolonged heating as a result of inadequate heat input will significantly reduce yield and result in an undesirable dry and salty product. Predrying at low temperatures does not appear to accomplish any useful purpose and reduces final yield. If a relatively high process temperature is required, e. g., 180° F., optimum conditions would appear to be rapid heating with simultaneous smoking,

instead of smoking separately as in past low-temperature smoking operations. Total time exposure to heat should be kept at a minimum to maximize yield.

5. Special "point-sensitive" temperature measuring devices (thermocouples) are absolutely necessary to give true internal fish temperatures, especially for small fish such as chub. Large temperature sensitive bulbs will probably give false readings, which may be 50° to 70° F. higher than internal fish temperatures.

6. Forced air circulation and baffling in the smokehouse are essential in order to avoid hot and cold spots. This should prove of concern to the processor insofar as regulations are concerned, and also because this problem will cause product nonuniformity and low yield due to overprocessing. Similarly, size grading should merit some consideration.

7. Chub vary widely in composition and in quality. Higher fat content is usually associated with the larger fish, although fish of uniform size are also quite variable. Size, quality, and composition of fish all affect salt uptake and product behavior during smoking.

8. Salt uptake during brining depends largely on time and concentration of brine. Two- to three-percent salt in the smoked product appears an acceptable range for most consumers. Brining chub overnight (16 to 18 hours) in 20° to 25° salinometer brine or for 2 hours in 40° to 50° salinometer brine will usually yield a satisfactory salt level in the smoked product.

9. A significant lowering of the pH of the smoked fish product by employing acetic, phosphoric, or lactic acids during the brining operation, was not found to be amenable to product quality. Severe texture and flavor changes were clearly evident, and product yield was significantly lowered. Decreasing pH of the smoked product to approximately 4.5 appears quite impractical.

10. Smoking of chub after packaging or reprocessing of presmoked chub to internal temperatures of 180° F. for 30 minutes yields inferior products.

11. The smoked product (chub) does not stiffen noticeably (i.e., "freeze") at 23° F., probably due to its relatively high fat and salt content. Thus, holding at 26° to 32° F. would probably not harm quality (texture changes due to freezing).

12. The finished smoked product should be cooled and packaged rapidly to minimize further loss of yield. Packaging should be fairly loose to permit the product to "breathe" and thus to avoid excessive surface moisture (retarding molding or slime formation).

Note: See Commercial Fisheries Review, February 1964 p. 44.

South Atlantic Exploratory Fishery Program

SOUTH ATLANTIC FISHERY EXPLORATIONS CONTINUED BY RESEARCH VESSEL "OREGON":

The U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon left Pascagoula, Miss., on July 1, 1964, for Brunswick, Ga., to continue the Bureau's exploratory fishing program initiated in 1960 along the South Atlantic coast. Exploratory cruises in the Caribbean Sea, conducted in the past by the Oregon, will be made from Brunswick until construction of a new Gulf of Mexico exploratory fishing vessel scheduled to start in 1965, is completed.

U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon.

Under a Bureau program realignment, the chartered exploratory fishing vessel Silver Bay has been returned to its owners. The Silver Bay participated in the Bureau's Gulf of Mexico and South Atlantic exploratory fishing and gear research programs over the past seven years. That vessel was used in locating and assessing the deep-water shrimp, scallop, and bottomfish resources in the Gulf of Mexico and along the Atlantic coast.

Tagging

MARLIN AND SAILFISH COOPERATIVE TAGGING PROGRAM IN EASTERN PACIFIC: United States sport fishermen are achieving results in a game fish tagging program in the eastern Pacific sponsored by the U. S. Bureau of Sport Fisheries and Wildlife, the International Game Fish Association, and the Woods Hole (Mass.) Oceanographic Institution. Four tagged marlin have been recovered within the past year by Japanese tuna longline vessels operating in the eastern Pacific. The recoveries included 2 marlin tagged off the east coast of Baja California, Mexico, which were recaptured 150 and 1,150 miles south of the point of tagging. In addition, a marlin was tagged and recovered in the mouth of the Gulf of California, and another tag was recovered in the same area from a marlin tagged off Acapulco, Mexico.

Within the past 2 years, over 1,500 striped marlin have been tagged off southern California, and off the west coast of Mexico in the area of southern Baja California, Mazatlan, and Acapulco.

Increased fishing by Japanese tuna longliners in the eastern Pacific should increase

Fig. 1 - Bilingual (English-Spanish) poster requesting tag returns in the Pacific Area Cooperative Tagging Program.

Fig. 2 - Bilingual (English-Japanese) poster requesting tag returns in the Pacific Area Cooperative Tagging Program.

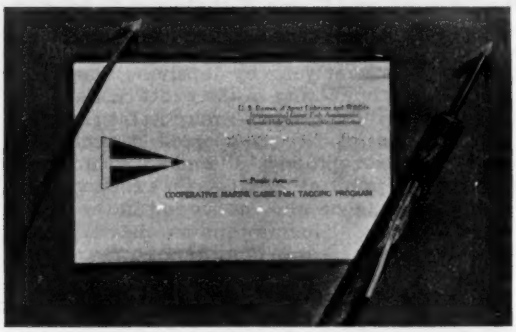


Fig. 3 - Shows the type of tag and tagging pole provided sport fishermen participating in the Pacific Area Cooperative Marine Game Fish Tagging Program.

tag recoveries and provide additional information on the migration of marlin and sailfish since long-line gear captures both those species in addition to tuna.

Tuna

ALBACORE EXPLORATORY CRUISE CONDUCTED BY OREGON FISH COMMISSION:

An exploratory 10-day cruise planned primarily to determine the movements of albacore tuna off the Oregon coast in early July 1964 was announced by the Oregon Fish Commission. The fishing vessel Chelan was chartered by the Commission for the cruise. The commercial fishing fleet was to be kept informed by radio of fishing success during the cruise.

The cruise plan called for operations 40 to 140 miles offshore where investigators were to collect basic oceanographic data, explore for albacore along a predetermined cruise track, obtain albacore for tagging as an aid in studying distribution and migratory habits of the species, and attempt to determine what relationship exists between oceanographic conditions and albacore occurrence. (Oregon Fish Commission, June 24, 1964.)

* * * * *

BLUEFIN TAGGED OFF BAJA CALIFORNIA RECAPTURED NEAR JAPAN:

A bluefin tuna tagged and released 70 miles northeast of Guadalupe Island, Baja California, was recovered 22 months later in the Sea of Japan off the northwestern corner of the island of Honshu.

The tuna was tagged and released on August 15, 1962, by a U.S. Bureau of Commercial Fisheries-California Department of Fish and Game research team, operating from the chartered purse-seiner West Point. The fish was recaptured on June 18, 1964, in a fixed trap net operated by Japanese fishermen near the coastal town of Fukaura, Nishi-Tsugaru County, Aomori Prefecture, Honshu. The bluefin traveled an estimated minimum Great Circle distance of 4,820 miles, growing from an estimated 23 pounds at the time it was tagged to 53 pounds at capture.

Fishery scientists of the Federal Government and California Department of Fish and Game initiated a cooperative bluefin tuna tagging program August 13-23, 1962. A total of 960 fish were then released. As of this past summer, a total of 168 tags had been recovered by California fishermen. This tag from the recaptured bluefin is the first to be returned from Japan.

One other tagged bluefin tuna has made a trans-Pacific migration. That fish was tagged by Inter-American Tropical Tuna Commission personnel in 1958 near Guadalupe Island, Baja California. It was recovered 5 years and 2 months later north of the Bonin Islands and had grown in weight from 30-35 pounds at tagging to about 265-267 pounds when captured.

Note: See Commercial Fisheries Review, August 1963 p. 53.

United States Fisheries

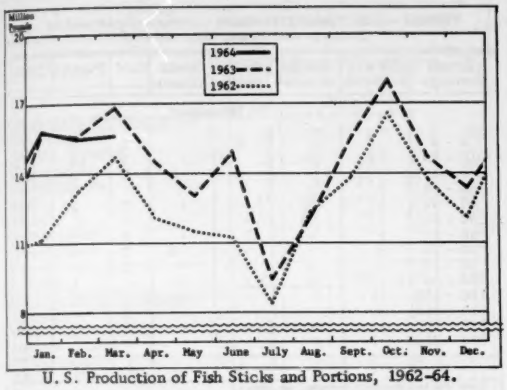
FISH STICKS AND PORTIONS, JANUARY-MARCH 1964:

United States production of fish sticks and fish portions amounted to 46.8 million pounds during the first quarter of 1964, according to preliminary data. Compared with the

Table 1 - U.S. Production of Fish Sticks by Months and Type, January-March 1964 1/

Month	Cooked	Raw	Total
	.... (1,000 Lbs.)		
January	6,710	516	7,226
February	6,597	464	7,061
March	6,419	544	6,963
Total 1st Qtr. 1964 1/	19,726	1,524	21,250
Total 1st Qtr. 1963 2/	22,683	1,165	23,848
Total 1963 2/	74,132	5,163	79,295

1/Preliminary.
2/Revised.



U. S. Production of Fish Sticks and Portions, 1962-64.

Table 2 - U. S. Production of Fish Sticks by Areas, January-March 1964 and 1963

Area	1/1964		2/1963	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States . . .	23	16,746	23	19,163
Inland & Gulf States . . .	5	2,347	7	2,460
Pacific Coast States . . .	11	2,157	11	2,225
Total	39	21,250	41	23,848

1/Preliminary.
2/Revised.

Table 3 - U.S. Production of Fish Sticks by Months, 1960-64

Month	1/1964	2/1963	1962	1961	1960
	(1,000 Lbs.)				
January	7,226	7,554	6,082	6,091	5,511
February	7,061	8,241	6,886	7,097	6,542
March	6,963	8,053	7,658	7,233	7,844
April	-	6,546	5,719	5,599	4,871
May	-	5,750	5,643	5,129	3,707
June	-	6,125	5,117	4,928	4,369
July	-	4,870	3,740	3,575	3,691
August	-	5,696	5,760	6,927	5,013
September. . . .	-	5,865	6,582	5,206	5,424
October	-	8,128	6,698	6,133	6,560
November . . .	-	6,471	6,305	6,288	6,281
December . . .	-	5,996	6,027	5,618	5,329
Total	-	79,295	72,217	69,824	65,142

1/Preliminary.
2/Revised.

Table 4 - U.S. Production of Fish Portions by Months and Type, January-March, 1964 1/

Month	Cooked	Breaded Raw	Total	Un-breaded	Total
	(1,000 Lbs.)				
January	1,536	6,733	8,269	257	8,526
February	1,739	6,238	7,977	420	8,397
March	2,111	6,294	8,405	179	8,584
Tot. 1st Qtr. 1964 1/	5,386	19,265	24,651	856	25,507
Tot. 1st Qtr. 1963 2/	4,139	19,416	23,555	814	24,369
Total 1963 2/	16,623	74,970	91,593	3,054	94,647

1/Preliminary.
2/Revised.

Table 5 - U. S. Production of Fish Portions by Areas, January-March, 1964 and 1963

Area	1/1964		2/1963	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	23	15,893	23	13,698
Inland & Gulf States	6	8,957	10	9,768
Pacific Coast States	10	657	8	905
Total	39	25,507	41	24,369

1/Preliminary.
2/Revised.

Table 6 - U. S. Production of Fish Portions by Months, 1960-1964

Month	1/1964	2/1963	1962	1961	1960
	(1,000 Lbs.)				
January	8,526	8,173	5,077	4,303	3,632
February	8,397	7,361	6,360	4,902	3,502
March	8,584	8,835	7,036	5,831	4,706
April	-	7,919	6,408	4,484	3,492
May	-	7,293	5,818	3,879	3,253
June	-	8,774	6,137	4,039	3,995
July	-	4,524	4,679	3,962	4,088
August	-	6,684	6,687	4,963	3,558
September . . .	-	9,621	7,180	5,745	4,631
October	-	9,877	9,871	6,759	5,275
November . . .	-	8,136	7,406	5,789	4,790
December . . .	-	7,450	6,019	5,191	4,459
Total . . .	-	94,647	78,678	59,847	49,381

1/Preliminary.
2/Revised.

same quarter of 1963, this was a decrease of 1.5 million pounds or 3.0 percent. Fish portions (25.5 million pounds) were up 1.1 million pounds or 4.7 percent, while fish sticks (21.3 million pounds) were down 2.6 million pounds or 10.9 percent.

Cooked fish sticks (19.7 million pounds) made up 92.8 percent of the January-March 1964 fish stick total. There were 24.7 million pounds of breaded fish portions produced, of which 19.3 million pounds were raw. Unbreaded fish portions amounted to 856,000 pounds.

The Atlantic States remained the principal area in the production of both fish sticks and fish portions, with 16.7 and 15.9 million pounds, respectively. The Inland and Gulf States ranked second with 2.3 million pounds of fish sticks and 9.0 million pounds of fish portions. The remaining 2.8 million pounds of fish sticks and fish portions were produced by firms in the Pacific States.

Total production of fish sticks and fish portions during 1963 (173.9 million pounds) was 23.0 million pounds or 15.3 percent above 1962. Fish sticks (79.3 million pounds) were up 7.1 million pounds or 9.8 percent; and fish portions (94.6 million pounds) increased 16.0 million pounds or 20.3 percent.

U.S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED:

May 1964: During May 1964, a total of 78 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 86 in May 1963. There were 30 documents cancelled for fishing vessels in May 1964, as compared with 42 in May 1963.

Table 1 - U.S. Fishing Vessels 1/--Documentations Issued and Cancelled, by Areas, May 1964 with Comparisons

Area (Home Port)	May 1964	May 1963	Jan.-May 1964	Jan.-May 1963	Total 1963
	(Number)				
Issued first documents 2/:					
New England	7	3	13	10	23
Middle Atlantic	2	3	5	7	18
Chesapeake	7	8	18	17	66
South Atlantic	4	9	21	27	77
Gulf	31	31	92	97	239
Pacific	27	31	53	78	160
Great Lakes	-	-	1	2	5
Puerto Rico	-	1	-	1	2
Total	78	86	203	239	590
Removed from documentation 3/:					
New England	3	5	8	24	48
Middle Atlantic	-	1	4	22	47
Chesapeake	4	4	7	10	25
South Atlantic	1	8	10	27	53
Gulf	6	13	27	55	118
Pacific	15	9	54	43	87
Great Lakes	1	2	6	7	15
Hawaii	-	-	-	1	3
Total	30	42	116	189	396

Note: For explanation of footnotes, see table 4.

Table 2 - U.S. Fishing Vessels--Documents Issued by Vessel Length and Area, May 1964 2/

Length in feet	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Total
	(Number)						
26 - 26.9	1	-	-	-	-	-	1
27 - 27.9	-	-	-	-	1	-	1
28 - 28.9	-	-	-	-	-	6	6
29 - 29.9	1	-	-	-	-	3	4
31 - 31.9	-	-	-	-	3	2	5
32 - 32.9	2	-	2	-	1	-	5
33 - 33.9	-	-	2	-	2	4	8
34 - 34.9	1	-	1	-	-	-	2
35 - 35.9	-	-	-	-	-	1	1
36 - 36.9	-	-	1	-	-	3	4
38 - 38.9	1	-	1	-	2	-	4
39 - 39.9	-	-	-	-	2	-	2
40 - 40.9	-	-	-	-	-	3	3
41 - 41.9	-	-	-	-	1	-	1
44 - 44.9	-	-	-	-	1	-	1
45 - 45.9	-	-	-	-	-	1	1
47 - 47.9	-	-	-	1	-	1	2
49 - 49.9	-	-	-	-	-	1	1
50 - 50.9	-	-	-	-	1	-	1
53 - 53.9	-	-	-	-	1	-	1
55 - 55.9	-	-	-	-	1	-	1
56 - 56.9	-	-	-	-	1	-	1
59 - 59.9	-	-	-	-	1	-	1
60 - 60.9	-	-	-	-	1	-	1
61 - 61.9	-	1	-	-	-	1	2
62 - 62.9	-	-	-	-	2	-	2
63 - 63.9	-	-	-	-	1	-	1
64 - 64.9	-	-	-	-	1	-	1
65 - 65.9	-	-	-	3	6	-	9
68 - 68.9	-	-	-	-	-	1	1
85 - 85.9	.1	-	-	-	-	-	1
135 - 135.9	-	-	-	-	2	-	2
168 - 168.9	-	1	-	-	-	-	1
Total	7	2	7	4	31	27	78

Note: For explanation of footnotes, see table 4.

Table 3 - U.S. Fishing Vessels--Documents Issued by Tonnage and Area, May 1964 2/

Gross Tonnage	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Total
	(Number)						
5 - 9	4	-	5	-	2	2	13
10 - 19	2	-	1	-	9	14	26
20 - 29	-	-	1	1	2	6	10
30 - 39	-	-	-	-	-	2	2
40 - 49	-	-	-	-	3	2	5
50 - 59	-	1	-	-	1	-	2
60 - 69	-	-	-	-	3	-	3
70 - 79	-	-	-	3	7	-	10
80 - 89	-	-	-	-	2	-	2
90 - 99	-	-	-	-	-	1	1
180 - 189	1	-	-	-	-	-	1
310 - 319	-	-	-	-	1	-	1
320 - 329	-	-	-	-	1	-	1
520 - 529	-	1	-	-	-	-	1
Total	7	2	7	4	31	27	78

Note: For explanation of footnote, see table 4.

Table 4 - U.S. Fishing Vessels--Documents Issued by Vessel Horsepower and Area, May 1964 2/

Horsepower	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Total
	(Nun ber)						
60	-	-	-		1	-	1
73	-	-	-	-	1	-	1
80-89	-	-	-	-	2	-	2
90-99	1	-	-	-	-	1	2
110-119	-	-	4	-	2	-	6
130-139	1	-	1	-	2	8	12
150-159	-	-	2	-	2	-	4
165	-	-	-	-	2	12	14
170	-	-	-	-	3	-	3
188	1	-	-	-	-	-	1
190	-	-	-	-	-	1	1
216	-	-	-	-	-	1	1
220-229	2	1	-	1	8	-	12
235	-	-	-	-	1	-	1
240	-	-	-	-	-	1	1
250	-	-	-	-	-	1	1
280	-	-	-	-	-	1	1
290	-	-	-	-	1	-	1
300-309	-	-	-	3	3	-	6
315	1	-	-	-	-	-	1
330	-	-	-	-	1	-	1
495	-	-	-	-	-	1	1
765	1	-	-	-	-	-	1
914	-	-	-	-	1	-	1
1000	-	1	-	-	-	-	1
1350	-	-	-	-	1	-	1
Total	7	2	7	4	31	27	78

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
2/Includes 1 redocumented vessel in May 1964 that was previously removed from the records. Vessels issued first documents as fishing craft were built: 63 in 1964; 4 in 1963; 1 in 1962; 1 in 1957; and 9 prior to 1956.
3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

* * * * *

April 1964: During April 1964, a total of 35 vessels of 5 net tons and over was issued first documents as fishing craft, as compared with 71 in April 1963. There were 47 documents cancelled for fishing vessels in April 1964, as compared with 56 in April 1963.

Table 1 - U.S. Fishing Vessels 1/--Documentations Issued and Cancelled, by Areas, April 1964 with Comparisons

Area (Home Port)	April 1964	April 1963	Jan.-Apr. 1964	Jan.-Apr. 1963	Total 1963
	(Number)				
Issued first documents 2/:					
New England	4	3	6	7	23
Middle Atlantic	1	2	3	4	18
Chesapeake	2	3	11	9	66
South Atlantic	1	5	17	18	77
Gulf	11	26	61	66	239
Pacific	16	31	26	47	160
Great Lakes	-	1	1	2	5
Puerto Rico	-	-	-	-	2
Total	35	71	125	153	590
Removed from documentation 3/:					
New England	3	14	5	19	48
Middle Atlantic	4	6	4	21	47
Chesapeake	2	1	3	6	25
South Atlantic	4	5	9	19	53
Gulf	13	19	21	42	118
Pacific	19	8	39	34	87
Great Lakes	2	2	5	5	15
Hawaii	-	1	-	1	3
Total	47	56	86	147	396

Note: For explanation of footnotes, see table 4.

Table 2 - U.S. Fishing Vessels--Documents Issued by Vessel Length and Area, April 1964 2/

Length in feet	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Total
	(Number)						
27 - 27.9	1	-	-	-	-	1	2
28 - 28.9	-	-	-	-	-	1	1
29 - 29.9	-	-	-	-	-	1	1
31 - 31.9	1	-	1	-	-	-	2
33 - 33.9	1	-	-	-	2	-	3
34 - 34.9	-	-	-	-	-	1	1
35 - 35.9	-	-	1	-	-	-	1
36 - 36.9	-	-	-	-	-	3	3
38 - 38.9	-	-	-	-	1	-	1
39 - 39.9	-	-	-	-	-	1	1
40 - 40.9	-	-	-	-	-	1	1
41 - 41.9	-	-	-	-	1	-	1
42 - 42.9	-	-	-	-	-	1	1
43 - 43.9	-	-	-	-	-	2	2
46 - 46.9	-	-	-	-	-	2	2
47 - 47.9	-	-	-	-	-	1	1
48 - 48.9	1	-	-	-	-	-	1
49 - 49.9	-	-	-	-	-	1	1
60 - 60.9	-	-	-	-	1	-	1
62 - 62.9	-	-	-	-	1	-	1
63 - 63.9	-	-	-	-	1	-	1
65 - 65.9	-	-	-	1	3	-	4
68 - 68.9	-	-	-	-	1	-	1
168 - 168.9	-	1	-	-	-	-	1
Total	4	1	2	1	11	16	35

Note: For explanation of footnotes, see table 4.

Table 3 - U.S. Fishing Vessels--Documents Issued by Tonnage and Area, April 1964 2/

Gross Tonnage	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Total
	(Number)						
5 - 9	2	-	2	-	-	3	7
10 - 19	1	-		-	4	4	9
20 - 29	-	-	-	-	-	4	4
30 - 39	1	-	-	-	-	2	3
40 - 49	-	-	-	-	-	2	2
50 - 59	-	-	-	-	1	1	2
60 - 69	-	-	-	-	3	-	3
70 - 79	-	-	-	1	3	-	4
540 - 549	-	1	-	-	-	-	1
Total	4	1	2	1	11	16	35

Note: For explanation of footnote, see table 4.

Table 4 - U.S. Fishing Vessels--Documents Issued by Vessel Horsepower and Area, April 1964 2/

Horsepower	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Total
	(Number)						
55	-	-	-	-	-	1	1
65	-	-	-	-	-	1	1
86	-	-	-	-	-	1	1
110	1	-	-	-	1	1	3
120	-	-	-	-	-	1	1
125	1	-	1	-	-	-	2
130	-	-	-	-	2	-	2
140	-	-	1	-	-	-	1
165	-	-	-	-	-	1	1
170	-	-	-	-	2	-	2
175	-	-	-	-	1	1	2
180	-	-	-	-	-	3	3
220	1	-	-	-	2	1	4
225	-	-	-	-	-	2	2
230	-	-	-	-	1	-	1
245	-	-	-	-	1	-	1
300	-	-	-	1	1	1	3
320	1	-	-	-	-	1	2
500	-	-	-	-	-	1	1
800	-	1	-	-	-	-	1
Total	4	1	2	1	11	16	35

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
2/These were no redocumented vessels in April 1964 previously removed from the records. Vessels issued first documents as fishing craft were built: 27 in 1964, 2 in 1963, 1 in 1962, 1 in 1954, and 4 prior to 1951.
3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U.S. Treasury Department.

U. S. Foreign Trade

IMPORTS OF CANNED TUNA UNDER QUOTA:

United States imports of tuna canned in brine during January 1-July 4, 1964, amounted to 17,793,706 pounds (about 847,300 standard cases), according to preliminary data compiled by the U. S. Bureau of Customs. This was substantially less (20.7 percent) than the 22,414,914 pounds (about 1,067,400 standard cases) imported during January 1-June 29, 1963.

The quantity of tuna canned in brine which can be imported into the United States during the calendar year 1964 at the 12½-percent rate of duty is limited to 60,911,870 pounds (or about 2,900,565 standard cases of 48 7-oz. cans). Any imports in excess of that quota will be dutiable at 25 percent ad valorem.

* * * * *

PROCESSED EDIBLE FISHERY PRODUCTS, MAY 1964:

United States imports of processed edible fishery products in May 1964 were down 7.7 percent in quantity and 7.4 percent in value from those in the previous month. There was an increase in imports of frozen fish blocks this May, and those for frozen wolffish fillets (sea catfish) and fresh and frozen swordfish were up substantially. The May 1964 imports of all groundfish fillets were down from the previous month, as were those for fresh and frozen tuna, canned tuna in brine, canned sardines not-in-oil, and canned crab meat.

Compared with the same month in 1963, imports in May 1964 also were down 7.7 percent. Imports were generally low-

er for most of the leading items, including frozen groundfish fillets and fish blocks, lobster and spiny lobster, frozen shrimp, fresh and frozen swordfish, canned sardines, and canned crab meat. These were offset partly by some gain in imports of fresh and frozen tuna, mostly albacore.

In the first 5 months of 1964, imports were about unchanged in quantity from those in the same period a year earlier, but the value was up 2.7 percent. During January-May 1964 there were larger imports of frozen fish blocks and fresh and frozen tuna, but imports of canned tuna were lower as were canned sardines and canned crab meat.

U. S. Imports and Exports of Processed Edible Fishery Products, May 1964 with Comparisons

Item	Quantity				Value			
	May		Jan.-May		May		Jan.-May	
	1964	1963	1964	1963	1964	1963	1964	1963
	(Millions of Lbs.)				(Millions of $)			
Fish & Shellfish:								
Imports[1]	37.2	48.3	205.5	205.6	11.3	12.1	60.7	59.1
Exports[2]	2.6	2.0	17.5	14.6	1.2	0.7	7.6	5.6

1/Includes only those fishery products classified by the U. S. Bureau of the Census as "Manufactured foodstuffs." Included are canned, smoked, and salted fishery products. The only fresh and frozen fishery products included are those involving substantial processing, i. e., fish blocks and slabs, fish fillets, and crab meat. Does not include fresh and frozen shrimp, lobsters, scallops, oysters, and whole fish (or fish processed only by removal of heads, viscera, or fins, but not otherwise processed).
2/Excludes fresh and frozen.

Exports of processed edible fish and shellfish from the United States in May 1964 were down 13 percent in quantity and 30 percent in value from those in the previous month. In May there were fairly sharp decreases in exports of canned salmon (down 37 percent), canned mackerel (down 43 percent), and canned sardines (down 54 percent). The declines were partly offset by increased shipments of canned squid (up 342 percent), mostly all to Greece.

Compared with the same month of the previous year, the exports in May 1964 were up 30 percent in quantity and 71 percent in value. This May there were larger shipments of most of the leading canned fish export items except canned squid and canned sardines not-in-oil. Exports of canned salmon to the United Kingdom this May increased 282 percent from those in the same month a year earlier.

Processed fish and shellfish exports in the first 5 months of 1964 were up 20 percent in quantity and 36 percent in value from those in the same period of 1963. In January-May 1964 there were much larger shipments of canned mackerel (up 227 percent) and shipments of canned salmon and canned shrimp were also higher, but exports of canned sardines not-in-oil and canned squid were down sharply.

Notes: (1) Prior to October 1963, the data shown above were included in news articles on "U. S. Imports and Exports of Edible Fishery Products." Before October 1963, data showing "U. S. Imports of Edible Fishery Products" summarized both manufactured and crude products. At present, a monthly summary of U. S. imports of crude or nonprocessed fishery products is not available; therefore, only imports of manufactured or processed edible fishery products are reported above. The above import data are, therefore, not comparable to previous reports of "U. S. Imports of Edible Fishery Products."

The export data shown are comparable to previous data in "U. S. Exports of Edible Fishery Products." The export data in this series of articles have always been limited to manufactured or processed products.

(2) See Commercial Fisheries Review, August 1964 p. 43.

* * * * *

VALUE OF U.S. FISHERY PRODUCTS EXPORTS UP SHARPLY IN 1963:

The total value of United States exports of fishery products (edible and inedible) was up sharply in 1963--58 percent higher than in 1962. The export value of edible fishery products increased 35 percent from the previous year and the value of inedible products was double that of 1962.

Value of United States Exports of Edible and Inedible Fishery Products, 1962-63

Product	1963	1962
	(U.S. Dollars)	
Edible:		
Salmon, fresh or frozen	2,530,062	871,806
Other fish, fresh or frozen	1,858,082	1,135,191
Shrimp, fresh or frozen	7,748,434	3,299,105
Salmon, canned	8,238,970	7,292,239
Shrimp, canned	3,053,650	2,572,187
Squid, canned	742,394	728,816
Shellfish, canned	1,263,009	1,506,680
Mackerel, canned	681,283	671,120
Sardines, canned	715,801	1,503,287
Salmon, salted, pickled or dry-cured	509,334	528,142
Other fish and shellfish	3,037,590	2,362,322
Total Edible	30,378,609	22,470,895
Inedible:		
Fish and fish-liver oils	15,636,141	6,046,852
Seal furs, dressed or dyed	5,876,523	3,850,958
Shells, unmanufactured	2,136,534	1,284,666
Fish, shellfish, and other marine-animal products	1,845,609	1,506,736
Other inedible	732,743	568,370
Total Inedible	26,227,550	13,257,582
Grand Total	56,606,159	35,728,477

Source: U. S. Exports of Domestic and Foreign Merchandise, FT 110, years 1962 and 1963.

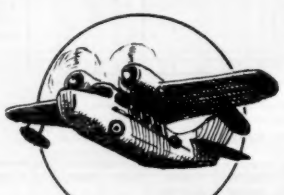
Principal items accounting for substantial increases in the edible fishery products group included shrimp (fresh, frozen, and canned) and salmon (fresh, frozen, and canned).

Among the inedible products, the export value of fish and fish-liver oils was up 159 percent from a year earlier. The 1963 export value of all other items in the inedible products group was much higher than in 1962.

* * * * *

AIRBORNE IMPORTS OF FISHERY PRODUCTS, JANUARY-MARCH 1964:

Airborne fishery imports into the United States in March 1964 amounted to 485,100 pounds valued at $233,800, down 21.6 percent in quantity and 26.7 percent in value from those in the previous month.



Total airborne imports in January-March 1964 were down 28.2 percent in quantity and 34.9 percent in value from those in the same period of 1963.

The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the bulk of the airborne imports consists of fresh and frozen products.

Table 1 - U. S.[1] Airborne Imports of Fishery Products, January, February, and March 1964

Product and Origin[2]	January		February		March	
	Qty.[3]	Value[4]	Qty.[3]	Value[4]	Qty.[3]	Value[4]
	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Fish:						
Portugal	-	-	0.1	0.1	-	-
Mexico	-	-	42.1	11.6	37.4	10.8
British Honduras	-	-	1.1	0.2	0.7	0.2
United Kingdom	1.0	1.8	0.5	0.9	0.2	0.5
France	3.6	6.9	0.3	0.3	-	-
Israel	-	-	1.3	0.8	-	-
Venezuela	-	-	4.6	1.7	-	-
Denmark	-	-	-	-	0.2	0.1
Canada	7.8	2.8	3.8	1.1	1.6	0.4
Iceland	0.8	0.6	1.0	0.6	-	-
Total fish	13.2	12.1	54.8	17.3	40.1	12.0
Shrimp:						
El Salvador	34.6	20.0	12.0	10.0	40.5	20.9
Nicaragua	1.0	0.9	-	-	5.6	3.2
Costa Rica	65.1	34.9	56.2	33.6	18.6	9.3
Panama	141.4	78.5	47.9	28.7	60.3	38.0
Venezuela	477.2	160.4	379.8	175.8	281.0	130.4
Total shrimp	719.3	294.7	495.9	248.1	406.0	201.8
Shellfish other than shrimp:						
Mexico	-	-	5.8	2.0	3.2	2.8
British Honduras	33.0	23.8	23.0	20.8	11.6	2.4
Honduras	6.7	7.3	1.7	1.3	-	-
Nicaragua	22.9	18.1	10.6	7.2	6.7	5.6
Costa Rica	-	-	9.3	9.5	-	-
Jamaica	16.1	11.2	9.7	9.1	6.2	5.9
British Guiana	-	-	-	-	8.6	1.6
Canada	-	-	-	-	1.2	0.9
Dominican Republic	-	-	0.5	0.1	-	-
Bahamas	-	-	6.5	3.1	-	-
Haiti	-	-	1.2	0.6	1.5	0.8
Total shellfish (excl. shrimp)	78.7	60.4	68.3	53.7	39.0	20.0
Grand Total	811.2	367.2	619.0	319.1	485.1	233.8

1/For explanation of footnotes, see table 2.

Table 2 - U. S.[1] Airborne Imports of Fishery Products, January-March 1964 with Comparative Data

Product and Origin[2]	Jan.-Mar. 1964		Jan.-Mar. 1963	
	Qty.[3]	Value[4]	Qty.[3]	Value[4]
	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Fish:				
Portugal	0.1	0.1	-	-
Mexico	79.5	22.4	78.6	23.7
British Honduras	1.8	0.4	26.2	6.6
Honduras	-	-	14.1	3.6
Japan	-	-	2.0	8.2
United Kingdom	1.7	3.2	0.9	2.1
Iran	-	-	1.2	7.4
France	3.9	7.2	0.4	0.3
Israel	1.3	0.8	-	-
Venezuela	4.6	1.7	-	-
Ireland	-	-	0.8	0.3
Denmark	0.2	0.1	-	-
Canada	13.2	4.3	-	-
Iceland	1.8	1.2	-	-
Total fish	108.1	41.4	124.2	52.2
Shrimp:				
Guatemala	-	-	85.9	45.5
El Salvador	87.1	50.9	127.6	89.2
Honduras	-	-	5.8	3.3
Nicaragua	6.6	4.1	73.3	21.7
Costa Rica	139.9	77.8	246.8	118.5
Panama	249.6	145.2	488.3	259.9
Venezuela	1,138.0	466.6	1,108.6	538.0
Ecuador	-	-	42.7	15.0
France	-	-	2.6	0.9
Total shrimp	1,621.2	744.6	2,181.6	1,092.0

(Table continued on next column.)

Product and Origin[2]	Jan.-Mar. 1964		Jan.-Mar. 1963	
	Qty.[3]	Value	Qty.[3]	Value
	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Shellfish other than shrimp:				
Mexico	9.0	4.8	66.5	39.0
British Honduras	67.6	47.0	90.0	69.4
El Salvador	-	-	3.6	2.8
Honduras	8.4	8.6	1.6	0.8
Nicaragua	40.2	30.9	38.3	31.4
Costa Rica	9.3	9.5	73.8	60.1
Jamaica	32.0	26.2	38.6	31.9
Netherlands Antilles	-	-	29.1	18.3
Colombia	-	-	0.8	2.5
Ecuador	-	-	1.1	1.5
Tunisia	-	-	-	-
British Guiana	8.6	1.6	-	-
Canada	1.2	0.9	-	-
Venezuela	-	-	13.7	6.0
Dominican Republic	0.5	0.1	6.2	5.0
Bahamas	6.5	3.1	-	-
Haiti	2.7	1.4	-	-
Total shellfish (excl. shrimp)	186.0	134.1	363.3	268.7
Grand total	1,915.3	920.1	2,669.1	1,412.9

1/Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.
2/When the country of origin is not known, the country of shipment is shown.
3/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.
4/F. o. b. point of shipment. Does not include U. S. import duties, air freight, or insurance.
Note: These data are included in the overall import figures for total imports, i. e., these imports are not to be added to other import data published.
Source: United States Airborne General Imports of Merchandise, FT 380, January, February, and March 1964, U. S. Bureau of the Census.

Wholesale Prices

EDIBLE FISH AND SHELLFISH, JULY 1964:

The July 1964 wholesale price index for edible fish and shellfish (fresh, frozen, and canned) moved up only 0.9 percent from the previous month. Substantial price increases this July for most fresh or frozen salt-water and fresh-water fishery products were offset by price declines in the processed fresh fish and shellfish group. But prices for processed frozen fishery products were all higher than in June 1964. At 106.6 percent of the 1957-59 average, the index this July was 3.1 percent lower than for the same month a year earlier. Prices this July were generally below those in July 1963 except for several fresh and frozen salt-water fishery products and a number of the canned fish items.

Considerably higher prices prevailed this July than in the previous month for ex-vessel large haddock (up 17.8 percent) at Boston and for western fresh halibut (up 5.6 percent) at New York City because of lighter-than-normal seasonal landings. July 1964 prices also were above those for June for western fresh king salmon (up 3.6 percent), Great Lakes drawn whitefish (up 23.5 percent), and fresh round yellow pike (up 20.0 percent). Those higher prices were responsible for the 8.1 percent increase from June to July in the subgroup index for drawn, dressed, or whole finfish. As compared with July 1963, the subgroup index this July was up 4.5 percent because of higher prices for all items except fresh-water fish.

Much lower prices from June to July for South Atlantic fresh shrimp (down 16.0 percent) at New York City were directly responsible for the 8.1 percent decline in the subgroup index for processed fresh fish and shellfish. The steep price drop for shrimp was partly offset by higher prices for small haddock fillets (up 7.9 percent) at Boston as a result of the higher ex-vessel prices for fresh haddock. Compared with Ju-

Wholesale Average Prices and Indexes for Edible Fish and Shellfish, July 1964 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1957-59=100)			
			July 1964	June 1964	July 1964	June 1964	May 1964	July 1963
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					106.6	105.6	105.4	110.0
Fresh & Frozen Fishery Products:					109.3	107.8	107.4	114.3
Drawn, Dressed, or Whole Finfish:					114.9	106.3	107.5	110.6
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.11	.10	88.6	75.2	60.5	83.4
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.40	.36	118.3	107.0	101.5	106.4
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.93	.89	129.2	124.7	127.8	122.3
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.53	.43	78.3	63.4	92.5	88.0
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.51	.43	83.5	69.6	94.2	100.7
Processed, Fresh (Fish & Shellfish):					105.5	114.8	117.2	120.8
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.35	.32	83.8	77.7	71.6	93.5
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.84	1.00	98.4	117.2	116.0	106.7
Oysters, shucked, standards	Norfolk	gal.	7.00	7.00	118.0	118.0	126.5	143.3
Processed, Frozen (Fish & Shellfish):					102.5	98.7	94.7	107.9
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.38	.37	95.0	92.5	92.5	100.1
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.37	.35	108.5	101.1	104.1	102.6
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.31	.30	108.7	105.2	105.2	116.6
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.84	.82	99.0	96.6	88.3	109.7
Canned Fishery Products:					102.2	102.2	102.2	102.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	22.25	22.25	97.0	97.0	97.0	104.6
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.50	11.50	102.1	102.1	102.1	99.0
Mackerel, jack, Calif., No. 1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	6.25	6.25	105.0	105.9	103.9	2/100.0
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.81	8.81	113.0	113.0	113.7	104.0

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/ Replaced California canned sardines starting December 1962; entered wholesale price index at 100 under revised procedures of Bureau of Labor Statistics.

ly 1963, prices in the subgroup this July were down for all products and the index was lower by 12.7 percent.

All products in the subgroup for processed frozen fish and shellfish were higher-priced this July and the index rose 3.9 percent from the previous month. Prices for haddock fillets at Boston were up 7.3 percent from June to July, and were higher by 5.8 percent as compared with July 1963. Prices this July were higher for other species of fillets in the subgroup and wholesale prices for frozen shrimp at Chicago rose 2 cents a pound from the previous month. The subgroup index this July was lower than for the same month a year earlier by 5.0 percent--prices were lower for all products but haddock fillets (up 5.8 percent).

The July 1964 subgroup index for canned fishery products at 102.2 percent of the 1957-59 average was unchanged from the previous month. Prices for each of the canned fish items were at about the same price level as the previous two months except for California canned jack mackerel which increased slightly from May to June as a result of low inventories.

Prices for canned Maine sardines were steady during July with a reported new season pack of some 300,000 cases toward the end of that month--less than half the pack for the same period in 1963. As compared with July 1963, the subgroup index this July was lower by 0.6 percent because of a decline in prices for canned pink salmon (down 7.3 percent) due to large inventories as the new season got under way. Prices for other canned fishery products this July were higher than in July 1963.

Created in 1849, the Department of the Interior--a department of conservation--is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States--now and in the future.

International

FISHING LIMITS

BRITISH-NORWEGIAN DISCUSSIONS:

An account of discussions between the United Kingdom and Norway on fishing limits appeared in the British Hansard (Parliamentary Debates), volume 697, no. 134, of July 2, 1964, as follows:

"Officials of the United Kingdom and Norway met in London from 17th to 23rd June to discuss the arrangements to be made, in accordance with the Note supplementary to the Anglo-Norwegian Fishery Agreement of 17th November, 1960, when the New United Kingdom fishery limits are introduced. In that Note Her Majesty's Government undertook to make for Norwegian vessels off the United Kingdom arrangements corresponding to those made under the Agreement for British vessels off Norway.

"Subject to the conclusion of a formal Agreement between their Governments in this matter, officials recommended that until 31st December, 1984, Norwegian vessels which would otherwise be excluded from the new fishery limits might continue to fish in the zone between six and twelve miles from the baselines of the territorial sea of the United Kingdom (a) for dogfish, in the area extending from a line due west of Ard an Runair (North Uist) northwards to a line due east of Start Point (Orkney) including the areas around the Flannan Islands, the Shetland Islands and Fair Isle and the off-lying islands of the St. Kilda Group, North Rona and Sulisker, Sule Skerry and Stack Skerry; and (b) for basking sharks, in the same area as for dogfish and also in the area between a line due west of the Mul of Oa (Islay) and a line due west of Ard an Runair.

"Norwegian vessels might also continue to fish for dogfish and basking sharks in these areas up to a limit of three miles from United Kingdom baselines until 31st December 1965, or, where straight baselines or bay closing lines more than ten miles long are drawn, until 31st December, 1966.

"If any fundamental change were to take place in the character of Norwegian fishing in these areas, Her Majesty's Government would review the position with the Norwegian Government. Any right to fish for dogfish or basking sharks in these areas extended to a third country would also be extended to Norway. The Government of the United Kingdom would enforce for Norwegian vessels fishing in these areas rules of conduct which for the time being would be those of the North Sea Fisheries Convention, 1882; the Government of the United Kingdom would not require Norwegian vessels to observe any conservation measures which might have the effect of abridging their right to fish for dogfish or basking sharks, unless such measures were accepted by the Government of Norway." (United States Embassy, London, July 8, 1964.)

Note: See Commercial Fisheries Review, May 1964 p. 70; March 1964 p. 35; February 1964 p. 59.

FISH MEAL

PRODUCTION AND EXPORTS FOR SELECTED COUNTRIES, JANUARY-APRIL 1963-1964:

Member countries of the Fish Meal Exporters' Organization (FEO) account for about 90 percent of world exports of fish meal. The FEO countries are Chile, Angola, Iceland, Norway, Peru, and South Africa/South-West Africa. Production and exports of fish meal by FEO countries during January-April 1964 were up substantially from that same period of the previous year.

Table 1 - Exports of Fish Meal by Member Countries of the FEO, January-April 1963-1964

Country	April		Jan.-Apr.		Total
	1964	1963	1964	1963	1963
	(1,000 Metric Tons)				
Chile	10.1	1/	53.0	1/	1/
Angola	2/	1.7	2/	9.1	30.0
Iceland	8.7	4.7	40.5	26.8	99.1
Norway	24.1	6.0	77.9	28.6	102.1
Peru	142.5	96.3	531.0	451.5	1,159.4
So. Africa (including S.W. Africa)	18.1	13.7	62.7	42.2	198.8
Total	203.5	122.4	765.1	558.2	1,589.4

International (Contd.):

Table 2 - Production of Fish Meal by Member Countries of the FEO, January-April 1963-1964

Country	April 1964	April 1963	Jan.-Apr. 1964	Jan.-Apr. 1963	Total 1963
	.(1,000 Metric Tons).				
Chile	13.3	1/	60.8	1/	86.8
Angola	2/	1.3	2/	8.5	31.5
Iceland	10.1	8.7	31.1	30.2	87.2
Norway	31.6	4.0	74.9	15.0	132.2
Peru	158.5	129.2	654.4	442.6	1,159.2
So. Africa (including S. W. Africa)	32.9	34.5	96.6	81.5	238.0
Total	246.4	177.7	917.8	577.8	1,734.9

1/Data not available. Chile became a member of FEO at the end of 1963.
2/Data not reported. January 1964 exports were 4,800 tons; January 1964 production was 5,600 tons.

During the first 4 months of 1964, Peru accounted for 69.4 percent of total fish-meal exports reported by FEO countries, followed by Norway with 10.2 percent, South Africa with 8.2 percent, Chile with 6.9 percent, and Iceland with 5.3 percent. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, July 15, 1964.)

FISH OIL

WORLD EXPORTS, 1963:

World gross exports of fish oil (including fish-liver oil) reached a record 480,500 short tons in 1963, reflecting the expansion in fish-oil shipments from the United States. World fish-oil exports in 1963 were up about 5 percent from those in 1962 and were more than twice the 1955-1959 average.

Peru, the United States, Iceland, and the South Africa Republic are the most important world suppliers of fish oil, accounting for nearly 75 percent of the world's gross exports and about 95 percent of the world's net exports of fish oil in 1963. Although several European countries export sizable quantities of fish oil, the area as a whole is a net importer and takes most of the world's exports of fish oil. Much of the domestic production of fish oil in Europe is retained for domestic consumption, normally in the country of origin, or exported to other European countries as in the case of Iceland, Portugal, Western Germany, and Denmark. In addition, Norway, Western Germany, and the Netherlands import large quantities of fish oil for further processing and export largely to other European countries.

Exports from the United States reached a record 131,200 tons in 1963, more than double the exports of 1962. The increase enabled the United States to surpass Peru and become the leading world supplier. Exports from the other major suppliers, except Iceland, declined substantially. (World Agricultural Production and Trade, June 1964, U. S. Department of Agriculture Foreign Agricultural Service.)

World Gross Exports of Fish Oil (Including Fish-Liver Oil) 1/ Annual 1958-1963 and 5-Year Average 1955-1959

Continent and Country	2/1963	1962	1961	1960	1959	1958	Average 1955-59
	.(1,000 Short Tons).						
North America:							
Canada	6.4	3.2	4.4	15.2	14.8	6.0	8.5
Mexico	.2	.3	.8	3/	.7	.7	.7
United States	131.2	61.5	61.2	71.8	72.2	47.0	64.1
Total No. America	137.8	65.0	66.4	87.0	87.7	53.7	73.3
South America:							
Argentina	.5	.4	.6	1.0	.4	.8	.5
Chile	12.7	12.0	5.1	6.6	.1	-	4/.1
Peru	121.3	166.0	112.8	38.6	18.9	1.8	3.5
Total So. America	134.5	178.4	118.5	46.2	19.4	2.6	6.0
Europe:							
Denmark	22.9	16.8	10.5	7.4	16.1	12.6	12.5
France	4.0	2.8	2.7	2.4	1.6	.4	1.1
Germany, West	19.7	22.9	25.3	26.2	31.6	17.9	17.9
Iceland	71.2	72.5	35.2	54.5	18.9	27.4	21.1
Netherlands 5/ 6/	2.8	2.6	5.2	7.8	16.0	13.0	10.4
Norway 6/	21.2	18.6	24.0	18.4	21.8	19.8	21.3
Portugal	10.5	6.7	7.4	4.9	5.7	5.5	5.1
Sweden	3.4	2.0	3.4	2.5	3.0	2.0	2.5
United Kingdom	2.7	2.6	3.2	3.7	3.7	3.6	3.8
Other countries (incl. U.S.S.R.) 7/	2.6	2.9	2.8	2.0	2.3	1.4	1.7
Total Europe	161.0	150.4	119.7	129.8	120.7	103.6	97.4
Africa:							
Angola	3.4	2.9	3.3	7.3	5.6	9.4	8.1
Morocco	5.7	4.9	4.5	5.7	4.3	4.5	2.7
So. Africa Republic 8/	35.3	50.4	50.3	37.4	26.6	18.5	15.2
Total Africa	44.4	58.2	58.1	50.4	36.5	32.4	26.0
Asia and Oceania:							
Japan	2.0	3.2	2.7	3.8	3.6	6.6	5.8
Other countries 7/	.8	.7	.8	1.0	1.7	1.2	1.2
Total Asia and Oceania	2.8	3.9	3.5	4.8	5.3	7.8	7.0
World total	480.5	455.9	366.2	318.2	269.6	200.1	209.7

1/Hardened fish oils have been included wherever separately classified in export statistics.
2/Preliminary.
3/Under 50 tons.
4/1959 only.
5/May include some whale oil prior to 1960.
6/Excludes sizable quantities of hardened fish oils exported annually which are not separately classified in trade returns.
7/Includes estimates for minor exporting countries.
8/Including the territory of South-West Africa.

FOOD AND AGRICULTURE ORGANIZATION

TUNA RESEARCH MEETING HELD IN ROME:

A meeting of the Expert Panel for the Facilitation of Tuna Research of the Food and Agriculture Organization (FAO) was held for the first time on June 8-12, 1964, in Rome.

The Panel, which was set up in 1963 by FAO's former Director-General, is made up of 11 tuna research scientists from 9 countries. The scientists are appointed in their individual capacities and not as representatives of organizations or governments.

One of the Panel's principal tasks will be to stimulate governments to implement rec-

International (Contd.):

ommendations passed at the World Scientific Meeting on the Biology of Tunas and Related Species held in La Jolla, Calif., in 1962. The recommendations, most of them technical, have already been transmitted to member countries.

The Panel will seek to develop international standards for collection, collation, and publication of data, as well as cooperative programs for tuna research. While the tuna is the most important fish species in international commerce, there are still many factors concerning it which are unknown. The Panel, was formed for the purpose of bringing those unknown factors to light. (Food and Agriculture Organization, Rome, June 3, 1964.)

* * * * *

GREATER INTERNATIONAL DISCIPLINE URGED IN HARVESTING WORLD'S OCEANS:

Governments have been called on to try harder to work out an international code of discipline for harvesting the world's oceans. The call came from the former head of the Food and Agriculture Organization's (FAO) Fisheries Division. Writing in the May/June issue of the Freedom-From-Hunger Campaign (FFHC) News, he says: "Any appeal for the establishment of such a code should not be directed to men's sentiments or to their fears, but to their enlightened self-interest, or even selfishness if you like."

The title of the article by the former FAO official is "The Warning of the Blue Whale." It is one of 9 articles, all concerned with world fishing, that appear in the May/June issue of the FFHC News.

According to the article, the blue whale, the largest mammal known to have appeared on earth, is now commercially extinct. "It has all but vanished from the seas because the nations that hunted it were unable to agree on a common and enlightened conservation policy for the world's whale resources," he writes.

Other articles in this issue of FFHC News cover modern methods of finding and catching fish, whaling, inland water fishing in Syria, mechanization of small fishing craft with outboard motors, fishing boat design, tuna fishing, preservation of fish and fish products, and pearl farming.

The article on the blue whale refers to the inability of the whaling nations to agree a few years ago to limit their catches of that whale species. The article says, "In the future, if we are to protect the sea's natural resources intelligently, we must have better treaties than the one that governed the hunting of the blue whale." (Food and Agriculture Organization, Rome, June 8, 1964.)

GEAR

SOVIET AND U. S. DELEGATIONS DISCUSS FISHING GEAR CONFLICTS IN NORTHEASTERN PACIFIC OCEAN:

Delegations of the United States of America and the Union of Soviet Socialist Republics concluded a two-week meeting in Juneau, Alaska, June 24, 1964, on fishery problems of mutual interest. The meeting was convened in accordance with an agreement between the two Governments, the basis for which was established in a meeting in Moscow in early March 1964.

The purpose of the meeting in Juneau was to work out detailed arrangements for preventing or diminishing conflicts between United States and Soviet fishing gear in the northeastern Pacific Ocean.

The United States Delegation was headed by William C. Herrington, Special Assistant to the Under Secretary of State; Governor William A. Egan was a member of the United States Delegation, together with Admiral George Synon, Commandant, 17th Coast Guard District, and representatives of the Department of the Interior, the Alaska Department of Fish and Game, and representatives of the United States fishing industry.

The Soviet Delegation was headed by A. S. Babaev, Chief Specialist of the Union of Soviet Socialist Republics State Production Committee of the Fishing Industry, and included Dr. V. G. Lafitsky, Senior Expert of this Committee, Viktor Novasb, Third Secretary of the Soviet Embassy in the United States of America, and a number of experts from the Soviet fishing industry.

The meeting resulted in the development of a draft agreement which the two Delegations recommended their Governments conclude through appropriate channels. The agreement provides for the establishment of a number of areas in the vicinity of Kodiak Island in which mobile gear will not operate during the period

International (Contd.):

July-October, inclusive, and establishes the procedures for amending (by mutual agreement between the Chief of the Soviet Fleet and local United States fishery officials) the boundaries of those areas or the periods during which they are reserved for fixed gear. It also provides for establishing new areas by mutual agreement.

The draft agreement establishes, in addition, a system of direct radio communication between the Soviet fleet and fishery officials in Alaska. This system can be used for reporting to the Soviet fleet the positions of the United States king crab vessels outside of the areas mentioned above in order that special precautionary measures can be taken to avoid damage to the vessels.

Under the provisions of the agreement the United States will undertake special research in cooperation with the Union of Soviet Socialist Republics in order to develop more effective means of marking and detecting fixed gear of various types.

The agreement would not prejudice existing rights of either Government.

During the meeting the representative of the United States raised the question of precautionary measures to avoid possible damage to fishing gear when the United States long-line fleet and the Soviet trawl fleet are operating in the same areas at the same time. The United States representative noted the urgency of the problem.

Because of technical difficulties and because the meeting was not prepared to deal definitively with this problem, the representatives of the United States of America and the Union of Soviet Socialist Republics agreed that the problem should be referred to the two Governments for their consideration by appropriate means.

The report of the meeting, including the recommendations, was signed by the two representatives in the office of Governor William A. Egan on June 24, 1964.

GREAT LAKES FISHERY COMMISSION

ANNUAL MEETING HELD AT ANN ARBOR, MICHIGAN:

The Great Lakes Fishery Commission held its annual meeting at Ann Arbor, Mich., June 17-18, 1964. The Commission is an international body (United States and Canada) formed to find means of protecting, and in the case of some species, rehabilitating the commercial stocks of the Great Lakes.

Under the chairmanship of Dr. D. L. Pritchard, Canadian Department of Fisheries, the Commission reviewed current sea lamprey control and lake trout rehabilitation programs, and held discussions on future use of Great Lakes fishery resources.

At the meeting, continued low levels were reported in Lake Superior barrier catches of the sea lamprey, a predator that has decimated lake trout populations in the upper Great Lakes since it moved into them shortly before World War II. As of June 12, 1964, a total of 9,184 lampreys had been trapped at 30 barriers in United States and Canadian spawning streams as compared with 7,246 lampreys taken by the same date a year earlier. Both figures are a great reduction from the 52,477 lampreys taken in 1961, when chemical treatment of spawning streams had not been completed. It was reported that the spawning run also appeared to have started earlier this year.

In reviewing the program of chemical treatment of Lake Superior spawning streams, the Commission's Chairman said, "Last year two new lamprey-producing streams in northern Lake Superior were treated and a number of treated streams on both shores containing ammocetes (lamprey larvae) were re-treated. We cannot be sure, at the moment, that those treatments have caused a further overall reduction in the lamprey population because their effect will not be evident until next spring (when the lamprey again come into the streams to spawn).

"A question which we must consider is--what level must lamprey be reduced for the program to be successful? Can lake trout be expected to recover and provide a significant fishery if the population is not reduced further than is presently indicated by the barrier catches? The questions cannot be answered properly at this time, since we do not know enough about the relationship between lamprey abundance and the loss of lake trout. We are, therefore, at a point in our program where, while we continue to see improvement in Lake Superior, we cannot predict without qualification the final result."

International (Contd.):

The Chairman said programs of treatment are being continued in Lake Michigan streams, and 90 Lake Huron streams have been located for possible future treatment.

The Commission's Lake Trout Rehabilitation Committee again reported favorable findings on lake trout survival in Lake Superior. Some 10.7 million hatchery-reared fish have been planted there since 1958 in an organized effort to re-establish an adequate breeding population.

The Chairman of the Rehabilitation Committee reported that information obtained from inshore waters indicated a further increase in the size and abundance of marketable lake trout on both sides of the lake in 1963. "Progressive increases in the abundance of the larger and older trout has apparently resulted from a continuation of the improved survival noted in 1962," he said. "On the other hand, reduction in the numbers of native fish in the smaller and mid-size range has continued due to the progressive decline of natural spawning after 1959. The scarcity of young native fish in many of the inshore areas of the lake, however, has been offset by the introduction of substantial numbers of hatchery-reared fish."

The incidence of lamprey-wounded lake trout in catches on both sides of the lake remained generally close to the low levels established in 1963, the report added.

An increase in the proportion of hatchery-reared fish in the 1963 catches was reported. In both Wisconsin and Michigan waters planted lake trout provided about 50 percent of the legal portion of the catch and 90 percent or more of the undersized portion. The contribution of hatchery-reared trout to the Canadian catches rose from 33 percent in 1962 to 58 percent in 1963. In 1963, a total of 2,311,000 marked lake trout were planted into Lake Superior, an increase of nearly a half million over 1962. The 1964 stocking consisted of a planting of some 2.6 million yearling lake trout--about 472,000 fish for release in Canadian waters and over 2.1 million in United States waters.

At an election of new officers, D. L. McKernan (Director of the U. S. Bureau of Commercial Fisheries) was elected chairman of the Commission for the next two years and Dr. D. L. Pritchard was elected vice-Chairman.

Note: See Commercial Fisheries Review, February 1964 p. 62.

INTERNATIONAL ATOMIC ENERGY AGENCY

RECOMMENDATIONS MADE ON RADIATION CONTROL OF HARMFUL ORGANISMS IN FOODS AND ANIMAL FEEDS:

The following recommendations were made by a Panel of the International Atomic Energy Agency (IAEA) on "Radiation Control of Harmful Organisms Transmitted by Food and Feed Products with Particular Reference to Salmonellae:"

A. As international trade with food and feed products increases, the transmittance of pests and diseases by such commodities tends to become an ever increasing problem. Concern has already been felt for some time about the spread of salmonellae and other pathogenic microorganisms, partly due to the international distribution of food and feeds produced in areas where it is difficult to maintain satisfactory sanitary conditions. However, even where good sanitary conditions are maintained contamination by harmful organisms remains a problem.

The Panel thoroughly reviewed various control measures, with particular attention to the use of ionizing radiation. Control was considered in the light of the present situation concerning the epidemiology of salmonellosis and a detailed assessment was made of the products that are known or potential sources of salmonellae and other harmful microbes.

B. It was the unanimous opinion of the Panel that salmonellosis constitutes a serious problem and that conventional methods such as heat treatment, the use of chemicals, and improved hygiene are not always satisfactory in dealing with this problem. It was also the unanimous opinion of the Panel that radiation treatment of some infected products is a promising alternative and in some cases the most practical way of freeing such products of salmonellae and similar organisms. It was pointed out that irradiation or any other treatment of the final product is supplementary to and does not replace good hygiene and that the best possible sanitary conditions should always be maintained.

C. The Panel drew attention to the lack of information regarding contamination of fish meal and other meals and that more detailed knowledge is needed with regard to number and types of microorganisms present in those products from different countries. It was recommended that IAEA should inform the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) about the situation and ask them to stimulate research on this problem in their Member States.

D. It was also recommended that IAEA should call the attention of WHO to the need to investigate and set up international standard methods for sampling and for detecting salmonellae and other harmful organisms present in foods and feeds.

E. The Panel unanimously agreed that additional research, both of a fundamental and applied nature, is

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still needed and that the best way in which IAEA can further the field of radiation control is to provide financial support for such research via its research contract program. More specifically, the Panel recommended research along the following lines:

(1) In Microbiology:

(a) Study of radiation resistance of additional serotypes of Salmonella;

(b) Study of the effects of water activity and of the lipid content of the irradiated products on radiation resistance of Salmonella;

(c) Effect of media and temperature on recovery of irradiated salmonellae with special reference to the use of Salmonella selective media.

This is an initial program for basic information. When a particular product is being studied it would be desirable to investigate also radiation inactivation of other pathogens, e.g. Bacillus anthracis.

(2) In Wholesomeness:

(a) More direct experiments should be made on the effect of radiation on the nutritive value of protein with particular reference to animal feeds. Animal tests as well as chemical and microbiological estimates of protein value should be made.

(b) More attention should be given to the effect of the dose levels being considered here (0.5 - 1 Mrad) on vitamin destruction in the individual foods where vitamin content might be important.

The Panel wishes to draw the attention of the "Expert Committee on Wholesomeness of Irradiated Food" being set up by FAO/WHO/IAEA to the problem of the possible toxicity of irradiated animal feeds and to its suggestion that the use of such feeds should be permitted.

(3) In Technology:

(a) When dose requirements for particular products have been fixed, detailed cost studies should be made in terms of a particular situation so that the best way of treatment can be established.

(b) A detailed on-the-spot analysis should always be made in each situation before deciding on location of an irradiation plant at import or export.

F. The Panel also recommended that IAEA support requests for the training of scientists from countries where radiation control of salmonellae and other pathogens might be considered. Long-term training as well as shorter study periods in laboratories where active research in this field is underway is highly desirable. It is essential that such training should be linked with the possibility for the trained scientist to perform research work on return to his home country.

G. The Panel finally recommended that the lectures presented at the meeting, as well as an edited version of the discussions should be published by IAEA in its Technical Bulletin Series. The publication should be given as wide a distribution as possible in order to draw international attention to the problem of transmittance of pests and diseases by food and feed products and to the potential use of atomic energy for its control. (Irradiation des Aliments--Food Irradiation, January-March 1964.)

INTERNATIONAL WHALING COMMISSION

16TH ANNUAL MEETING HELD:

The 16th Annual Meeting of the International Whaling Commission was held at Sandefjord, Norway, June 22-26, 1964. The Commission (established in 1948 to preserve dwindling whale stocks through scientific study and regulation of catches) at this meeting reviewed progress in the program of scientific studies of whale resources which is intended to serve as an objective basis for effective conservation measures. At the 17-nation meeting, no agreement was reached on the Nineteenth Antarctic whale catch quota. After the meeting, the four whaling nations--Japan, U.S.S.R., Norway, and the Netherlands--informally agreed on a catch quota of 8,000 blue-whale units for the 1964/65 Antarctic pelagic whaling season. That quota was a reduction of 2,000 units from the 1963/64 season catch limit of 10,000 units.

This further reduction in the catch limit demonstrates the concern felt over the diminishing whale stocks in the Antarctic. Out of the total 10,000 blue-whale units allocated the four countries in the 1963/64 season, only 8,425 units were caught. In the 1962/63 season, the pelagic expeditions caught 11,306 blue-whale units out of a total quota of 15,000 units.

Under the quota for the coming season, Japan's share is 3,680 blue-whale units; Norway 2,240 units; U.S.S.R. 1,600 units; and the Netherlands 480 units.

Japan's share is based on 46 percent of the international whale catch quota. Japanese whaling firms were reported to have begun organizing their whaling fleets. Negotiations had been pending for the purchase by 3 Japanese firms of the Dutch whaling factoryship Willem Barendsz (26,830 gross tons), but in view of developments it appeared that the negotiations might be terminated.

Note: See Commercial Fisheries Review, August 1963 p. 78.

NORDIC COUNTRIES

NINTH NORDIC FISHERIES CONFERENCE:

At the Ninth Nordic Fisheries Conference held in Reykjavik this past summer, Norway's Director of Fisheries stressed the necessity

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of regulating total fishing operations in the North Atlantic to insure good and constant fishing in the future. He said that if cooperation cannot be obtained among the parties concerned, then individual countries will have to take their own measures.

The conference was attended by the fisheries committees of the respective governments and representatives of the various branches of the fishing industry of each country (Denmark, Finland, Norway, Sweden, and Iceland).

The opinion of Norway's Director of Fisheries was that trawl fishing is the major cause of the lower stocks of fish in all age groups. European fishing nations, he said, must find ways to guard the fish stocks. He said that international measures taken in that field have not been effective because the preliminary preparations for implementing them took too long. This state of affairs, he claimed, is especially true in the North Atlantic where a period of 9 years of no rules at all was followed by 9 years of unsatisfactory rules. He recommended regulations regarding the size of the mesh of nets and the necessity for international supervision of fishing vessels, restrictions on the number of fishing boats, a special quota to be allowed for each kind of fish for all fishing areas, and individual country quotas. He recalled the demands made by coastal nations at the Geneva Conference in 1958 and 1961.

According to the chief of the Icelandic Fisheries Institute, the major purpose of the fisheries conference was to provide a meeting place for the Nordic fisheries specialists to get together and exchange ideas, views, and experiences on common problems. His address to the conference stressed the importance and wealth of fishing to Icelanders. He described it as a "rich natural resource" and remarked that Iceland's fishery catch has increased 19 times in the past 50 years. Iceland's share in the total fish catch in her waters has also grown (presently about 60 percent) since few other nations fish in Icelandic waters. The only countries in Europe that have larger fish catches at the present time are the U.S.S.R., Norway, Spain, and Great Britain. But while Iceland's fishery catch is larger in quantity than that of many other countries, in value it is not as great because so much of Iceland's catch goes into reduction or into semiprocessed stages which are used by other nations as raw material to produce the more valuable finished food products. He suggested that perhaps Iceland concentrates too much on building the size of her fishing fleet so as to increase the catch instead of concentrating on the construction of fish-processing facilities and thus increase the value of the existing catch.

The Fisheries Institute chief conceded that this raises the problem of ever-increasing tariff restrictions of consumer nations placed on finished fish-food products which prevent Iceland from finding adequate markets and from competing with domestic production. Iceland has often asked those countries to help Iceland solve this problem and in turn Iceland will buy industrial products from those countries. Iceland also is becoming increasingly worried about the direct subsidies being paid by many countries to their fishing industries which fosters an "unnatural development" of fish marketing and hinders the natural development of fishing, such as in Iceland. Iceland's position among fishing nations will depend on the development of such trends in the future.

Other speakers at the conference included Sweden's Director of Fisheries who spoke on the Swedish Salmon Research Institute, and a representative from Denmark who spoke on international standardization of fish and fish products. (United States Embassy, Reykjavik, July 14, 1964.)

Note: See Commercial Fisheries Review, October 1962 p. 41; June 1962 p. 46.

NORTH PACIFIC FISHERIES CONVENTION

PARTIES TO THE CONVENTION WILL SEEK AGREEMENT AT MEETING IN OTTAWA, SEPTEMBER 9, 1964:

Talks begun in Washington and continued in Tokyo last year for revision of the International Convention for the High Seas Fisheries of the North Pacific Ocean will reopen in Ottawa, Canada, September 9, 1964. The Parties to the Convention (Canada, Japan, and the United States) are seeking agreement on modification of the treaty under which the International North Pacific Fisheries Commission was established in 1953 and charged with developing recommendations for the conservation of the high-seas fisheries of the North Pacific.

The treaty had a guaranteed minimum life of 10 years and thereafter until 1 year from

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the date on which any member country should give notice of termination. No such notice has been given, but in 1963, at the request of Japan, two rounds of negotiations took place among the Contracting Parties. The first round was held in Washington in June and the second in Tokyo during September and October. Progress toward an agreement was made at those meetings but further negotiations are required. (Canadian Department of Fisheries, Ottawa, June 25, 1964.)

Note: See Commercial Fisheries Review, Feb. 1964 p. 64, Jan. 1964 p. 41, Dec. 1963 pp. 52 and 71.

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

FISHERIES COMMITTEE MEETS:

The Fisheries Committee of the Organization for Economic Cooperation and Development (OECD) met at Paris, France, June 29-30, 1964. At the meeting, the Committee considered a Report on Subsidies and other financial support to the fishing industries of member countries. Other topics on the agenda were: (1) country notes on study of price systems, (2) a note on the influence of recent changes in custom duties for fish fillets, and (3) a progress report on the execution of the Committee's programs.

Note: See Commercial Fisheries Review, Aug. 1963 p. 76; May 1963 p. 54; Feb. 1963 p. 62.

SHRIMP

INTERNATIONAL SHRIMP COUNCIL PLANNED TO PROMOTE SHRIMP CONSUMPTION:

A resolution authorizing the creation of an International Shrimp Council was adopted in May 1964 by the Board of Directors of the Shrimp Association of the Americas. Chas. E. Jackson, Fisheries Consultant of Washington, D.C., has been employed by the Association to direct the Council's development.

The new Council is intended to be a world-wide organization with a membership which will consist of the countries which produce shrimp. Its major objective will be the promotion and expansion of the shrimp market and the increased consumption of shrimp in the United States and elsewhere through advertising and publicity. Something similar to the international institute that was organized by the world-wide coffee producers several years ago is contemplated in the creation of the International Shrimp Council. (Shrimp Tales, Bulletin No. 294, Shrimp Association of the Americas.)

WHALING

WHALE DISTRIBUTION IN NORTHEAST PACIFIC SHOWN ON SOVIET MAP:

A map showing the distribution of whales in the Northeast Pacific Ocean and the Bering Sea was on show at one of the sessions in Vladivostok, U.S.S.R., of the scientific council of the Pacific Fishing and Oceanography Research Institute. It sums up results of the North Pacific expedition of the Institute from 1958 to this year.

The map marks main areas of distribution of sperm, humpback, and finback whales, and also their summer and winter habitats. It shows the northern boundary of the distribution of sperm whales which has been determined for the first time.

The map is considered important for organizing rational whaling, and Soviet expeditions use it as an aid to safeguarding stocks and fulfilling international conventions restricting whaling. (The Fishing News, March 26, 1964.)

Australia

TUNA FISHERY HAS GOOD SEASON:

Late in May 1964, South Australia's record-breaking tuna season was still going strong. Up to May 20 total landings at Port Lincoln were 6,059 short tons, pushing the Australian catch for 1963/64 (July-June) up to 8,974 tons. This was 3,475 tons more than in 1962/63, thus making tuna the leader in the Commonwealth's annual finfish catch.

A record single day's landing at Port Lincoln was 430 tons on February 22, 1964, which would have been greater had not a sudden storm resulted in 40 tons of tuna being lost overboard by the fleet of 20 vessels. (Australian Fisheries Newsletter, June 1964.)

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TUNA COULD TOP FISH CATCH:

Tuna appears certain to head the list in the Australian finfish catch by weight for fiscal year 1963/64. By April 24, the Australian tuna catch was a record 8,215 short tons, and

Australia (Contd.):

had exceeded the 1962/63 year's total by 2,716 tons.

If past seasons' trends are maintained, it is estimated that the 1963/64 tuna catch will total 8,670 tons (17,340,000 lbs.). It will be worth an estimated Ł500,000 (US$1.1 million) ex-vessel.

The New South Wales tuna season ended in January with a record catch of 2,915 short tons while in South Australia the total was a record 5,300 tons by April 24, 1964.

Except for 1956/57, when Australian salmon held top place, mullet has been the leader in the annual finfish catch by weight for the past 10 years, and production has remained steady at between 12.0 to 13.0 million pounds. The 1962/63 mullet catch was 13,734,696 lbs., worth an estimated Ł572,279 (US$1.3 million) ex-vessel.

A total of 600 short tons of frozen whole bluefin tuna caught off the South Australia coast was exported to the west coast of the United States in March 1964. (Australian Fisheries Newsletter, May 1964.)

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DUTY ON SHRIMP IMPORTS:

A duty of 1s. (about 11 U.S. cents) a pound on imports of frozen shrimp and prawn, and prawn meat from both British preferential and most-favored nation sources came into force on April 24, 1964. Previous duty was 1d. (about 0.9 cent) a pound. Frozen shrimp and prawn of New Zealand origin will be subject to a duty of 4d. (about 3.6 cents) a pound.

Announcing the new tariff, the Minister representing the Minister for Customs and Excise said the protection afforded was approximately at the level enjoyed by the industry prior to the removal of the sales tax in August 1963.

Queensland Gold Coast trawlers reported locating king-size shrimp more than a foot long and up to half a pound each on a reef 14 miles offshore. (Australian Fisheries Newsletter, May 1964.)

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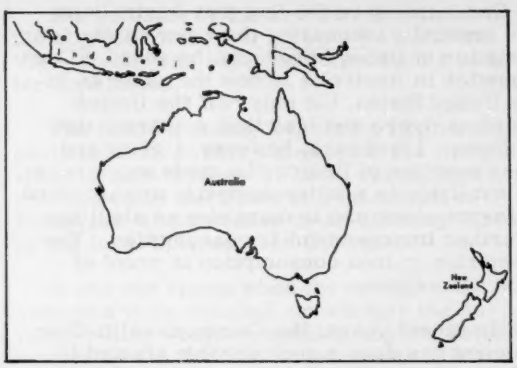
FISHERIES LANDINGS, 1962/63:

Australia's fish and shellfish landings of 153.8 million pounds in fiscal year 1962/63 (July 1-June 30) set another record, announced the Australian Minister for Primary Industry. Exports and imports of fishery products rose slightly, and home consumption was at 11 pounds per capita annually. The larger landings for the year were attributed to a 26-percent increase in shrimp landings, a spiny lobster catch that was 6 percent above the previous year, and a small increase in finfish landings.



In the past 8 years, Australia's fishery landings climbed steadily from 104 million pounds in fiscal year 1955/56 to where they reached the much larger amount in 1962/63--an increase of 48 percent. At the same time, Australia's per capita consumption of fishery products kept pace with the growing population and rose from 10 to 11 pounds annually.

The leading species in the 1962/63 finfish landings was mullet with 13.7 million pounds, followed by tuna with 11 million pounds (an increase of 400,000 pounds from the previous year). The increase in tuna landings was considered only moderate because of the relatively small tuna catch in New South Whales. In the past 8 years, however, Australia's tuna landings have increased by more than one million pounds.

Australia's shark catch is growing in importance having increased 17 percent from the previous year to 10.5 million pounds in 1962/63. Victoria was again the leading shark producer, although New South Wales and South Australia both increased their shark landings significantly.

Australia (Contd.):

Australian salmon and barracouta landings dropped 32 percent and 29 percent, respectively, from the previous year.

The Minister said fishery products exports had increased in the past 8 years from 5.4 million pounds to 13.6 million pounds, or by more than 150 percent and imports had moved up from 52.5 million pounds to 64.3 million pounds, an increase of 23 percent.

Commenting on the fact that Australians are gradually increasing their per capita consumption of fishery products, he added, "Consumption in Australia is now the same as in the United States, but only half the United Kingdom figure and less than a quarter that of Japan. I feel sure, however, that as and when supplies of fish can be made more readily available to a wider domestic market--and in forms which are in demand--we shall see a further improvement in consumption. The steep rise in tuna consumption is proof of what can happen.

"In recent years, the Commonwealth Government has done a considerable amount to help the Australian fishing industry by way of surveys, the encouragement of new techniques, improved fisheries management, and research into the habits of important species. This work will continue." (The Fishing News, March 1964.)

Note: See Commercial Fisheries Review, March 1964 p. 41.

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TASMANIA SCALLOP SEASON EXTENDED:

On the recommendation of the Sea Fisheries Advisory Board, the 1964 Tasmanian scallop season on all beds opened on May 14, 1964. The ban on Sputnik (Baird) dredges remains, but night fishing will be allowed.

The Tasmanian Minister for Fisheries said that it was intended to leave the season open for as long as possible to encourage and maintain a stable industry. (Australian Fisheries Newsletter, May 1964.)

Canada

NEW FISH-PROCESSING PLANT OPENS IN NOVA SCOTIA:

A new Canadian fish-processing plant, built at a cost of US$8 million, was opened at Lunenburg, Nova Scotia, on June 24, 1964. The plant covers an area of 5½ acres. With an estimated production capacity of over 80 million pounds of fishery products and by-products a year, the plant will require more than 20 trawlers to keep it supplied with raw material. About 400 persons will be employed on shore, and nearly 500 more at sea.

The plant is capable of handling up to 50,000 pounds of fish an hour, and will have a maximum filleting rate of 35,000 to 45,000 pounds an hour. Smoked fish production capacity is 30,000 pounds in 12 hours, and fish meal production of 150 long tons each 24 hours.

The plant's cold-storage holding capacity is 6 million pounds and it can make 180 tons of ice a day. A wharf fish-holding room can accommodate 300,000 pounds of fish.

* * * * *

NEW FISHERIES RESEARCH VESSEL PLANNED:

A 130-foot fisheries research vessel equipped with a number of unusual features is to be added to the Atlantic Coast research vessel fleet of the Fisheries Research Board of Canada, announced Canada's Fisheries Minister on July 3, 1964. This will aid Canada's Department of Fisheries in the national development program and in fulfilling its international commitments in fisheries conservation.

The Canadian Department of Transport has invited bids for a pelagic fisheries research vessel to be equipped for stern trawling and scallop dragging, with a range of 3,000 miles at a cruising speed of 11 knots. She will have a 27-foot beam, a draft of 10 feet 9 inches, and a complement of 21 (including scientific personnel and crew).

The vessel will be equipped with a passive antirolling "flume stabilization" system to provide a steady platform while in operation at sea, and a bow-thruster will be installed well below the low-water line for slow-speed maneuvering. The design is the first of its kind to have a "flume stabilization" sys-

Canada (Contd.):

tem, a bow water jet-thrust system, and the absence of bilge keels.

The vessel specifications call for all-welded construction with a steel hull strengthened for navigation in ice, and an aluminum deckhouse and wheelhouse amidships. An extended foc'sle, raked stem, and reverse transom will enhance the appearance of the vessel. Provision is made for fish pounds and fishing equipment and gear to be located on the upper deck aft. One of the unusual features will be the installation of specially-designed hinged gallows for lowering and retrieving trawls. The propulsion machinery will be amidships.

The steering gear will be of the electro-hydraulic rotary vane type with emergency hand-hydraulic operation. An electro-hydraulic anchor windlass capable of a one-half-ton pull at 110 feet per minute will be fitted on the forward deck. Two hydraulic trawl winches, each capable of exerting a pull of 4 tons at 240 feet per minute will be fitted to operate in synchronization or independently as required. An oceanographic winch is to be fitted to permit the taking of samples which will be processed in the vessel's laboratories.

The most modern navigational aids available are to be installed and will include 2 radars, gyro-compass, automatic pilot, 3 echo-sounders, Loran, navigator, and radio-telephones. The propulsion machinery will consist of a nonreversing, two-stroke direct drive Diesel engine rated 600 b.hp. cont. at 310 r.p.m. and coupled to a four-bladed, controllable, pitch, stainless steel propellor. Electric power will be provided by 3 Diesel driven generators.

The vessel is expected to be put into service in the spring of 1966. (Canadian Department of Fisheries, Ottawa, July 3, 1964.)

* * * * *

SPANISH TRAWLER CONVICTED FOR VIOLATION OF TERRITORIAL WATERS:

Two Spanish fishing trawlers were arrested by the Canadian Government at St. John's, Newfoundland, in October 1963, for fishing inside Canadian territorial waters at Trepassey Bay in southeastern Newfoudland. On July 15, 1964, one of those two trawlers was convicted by a St. John's Magistrate Court. The captain of the trawler Estornino was sentenced to one month in jail or $200 fine for unlawfully fishing inside Canadian waters. Both trawlers had been arrested at the same time and place--45°35' N. latitude, 53°22'5" W. longitude, 6 miles from Cape Pine at the western tip of Trepassey Bay.

The St. John's Magistrate based his decision on these points: (1) Trepassey Bay is defined as a bay under international law; (2) the headland to headland rule for measuring territorial waters is applicable.

The outcome of the second case, involving the companion trawler Esturion also from Vigo, Spain, was expected to produce a similar conclusion.

The Court's ruling followed a 10-months postponement of both cases, with the vessels under $1,000 bond each. Both cases were prosecuted by the Federal Department of Fisheries, and defended by an attorney hired by the local Spanish Vice Consul.

It was not known when the second court case was to be decided, or whether the adverse ruling would be appealed by the defendants or by the Spanish Government. (United States Consulate, St. John's Newfoundland, July 21, 1964.)

* * * * *

BOUNTY PAYMENTS ON PACIFIC HARBOR SEALS DISCONTINUED:

The discontinuance of bounty payments on harbor seals on Canada's Pacific Coast became effective July 31, 1964, announced the Canadian Minister of Fisheries on July 17. As a means of control of the predatory harbor seal population, the Canadian Government has, for many years, paid a bounty of C$5.00 on each proven kill.

The recent introduction of new processes in preservation and treatment of harbor seal skins has contributed to the development of markets for the skins, particularly in Europe. The demand has grown steadily and prime harbor seal skins have been bringing more than $50.00 each on the local market.

The commercial production of harbor seals has now reached a point where population control by the bounty payment method no longer is necessary. The decision to cease bounty payments follows a careful study of

Canada (Contd.):

all factors involved by personnel of the Department of Fisheries and scientists of the Fisheries Research Board of Canada. (Canadian Department of Fisheries, Vancouver, July 17, 1964.)

Chile

TUNA FLEET TO BE EXPANDED:

Chile is planning to progressively expand her tuna fishing fleet, according to information received by the Japan Frozen Tuna Producers Association. Of the 3 Chilean fishing firms presently operating 4 tuna vessels from bases in that country, one firm is said to be planning on increasing its tuna fleet to a total of 10 vessels by the end of 1965. Many Chi-

lean "surrounding net" or purse-seine fishing vessels (170-180 gross tons in size), which are fishing for anchoveta, reportedly can be converted into tuna vessels. (Suisan Keizai Shimbun, July 11, 1964.)

* * * * *

DEVELOPMENTS ON THE PROPOSED JAPANESE-CHILEAN KING CRAB VENTURE:

A Japanese fishing company, which plans to establish a joint king crab fishing venture with Chilean interests, is studying the results of the experimental crab operations conducted off the Chilean coast December 1963-April 1964. Its findings so far indicate the need to conduct another series of exploratory operations before full-scale commercial operations can be started. Therefore, indications are that the proposed joint venture may not become an established commercial enterprise until the fall of 1965. (Suisan Tsushin, July 13, 1964.)

Communist China

PURCHASE OF LARGE TRAWLERS PLANNED:

The Central Trust Corporation of Mainland (Communist) China planned to accept bids on September 4, 1964, for the construction of three 1,000-ton trawlers. The Corporation

plans to use the trawlers in the Yellow Sea fishery and hoped to purchase the vessels from Japan. (Suisancho Nippo, July 4, 1964.)

Cuba

IMPORTS OF FISHERY PRODUCTS FROM JAPAN, JANUARY-APRIL 1964:

Japan exported 586 metric tons of frozen tuna and swordfish to Cuba during January-April 1964, with an f.o.b. value of US$180,000 (65,276,000 yen). The principal product was 535 tons of yellowfin tuna with a value of $166,000 (average of $310 a ton), followed by 20 tons of albacore valued at $6,500 (average $325 a ton), 6 tons of unclassified tuna valued at $1,700 (average $238 a ton), and 25 tons of

Cuba (Contd.):

swordfish (excluding broadbill) valued at $6,000 (average of $240 a ton). (Customs Division of Japanese Ministry of Finance.)

Denmark

FISHERIES TRENDS, FIRST QUARTER 1964:

Landings: Danish fisheries landings in home ports during January-March 1964 were about 9 percent below those in the same period of 1963 due to a sharp drop in landings of industrial fish which more than offset increased landings of most food fish items. On the other hand, foreign vessels increased their landings in Danish ports in early 1964. (Danish imports of fishery products consist mostly of fresh fish, mainly herring, landed by Swedish fishing craft in the Danish ports of Skagen and Hirtshals.) The limited landings of Danish vessels in foreign ports (mainly England) consisted mostly of cod.

Table 1 - Danish Fisheries Landings, January-March 1963 and 1964

Species	Jan.-Mar. 1/1964	Jan.-Mar. 1963
	(Metric Tons).	
Landings in Denmark by Danish vessels:		
Flatfish	13,145	7,833
Cod	25,766	20,412
Herring	69,436	54,709
Brisling	1,868	1,419
Mackerel	215	191
Eels	26	49
Pond trout	1,835	1,570
Other fish 2/	19,885	66,202
Mussels	4,657	578
Starfish	1,466	10
Shrimp, lobsters, & other shellfish	1,104	800
Total	139,403	153,773
Landings in Denmark by foreign vessels	50,374	41,240
Danish landings in foreign ports of United Kingdom, Sweden, and the Netherlands	688	290

1/Preliminary.
2/Mostly industrial fish.
Source: Danish Ministry of Fisheries.

Processing: Danish production of processed fishery products in January-March 1964 was reported by the Danish Ministry of Fisheries as follows:

Canned products: 1,395 metric tons of herring and sprats, 74 tons of mackerel, 184 tons of mussels, 175 tons of other shellfish, and 1,960 tons of other fish products.

Semipreserved products: 1,225 tons of herring and sprats, 103 tons of other fish products, and 108 tons of mussels.

Fresh and frozen fillets: 7,281 tons of cod, 292 tons of "cod-like" (haddock, coalfish, hake, ling, etc.) fish, 2,738 tons of plaice, 254 tons of other flatfish, 10,175 tons of herring, and 35 tons of other fish.

Smoked products: 229 tons of herring and sprats, 114 tons of mackerel, 169 tons of eels, 105 tons of salmon and trout, and 62 tons of other fish.

Industrial products: 14,511 tons of fish meal, 5,316 tons of fish oil, 1,405 tons of fish solubles, and 1,214 tons of ensilage (chemically treated raw fish).

Miscellaneous products: 391 tons of "force meat" (ground fish mixed with milk and flour) and 280 tons of other miscellaneous fishery products.

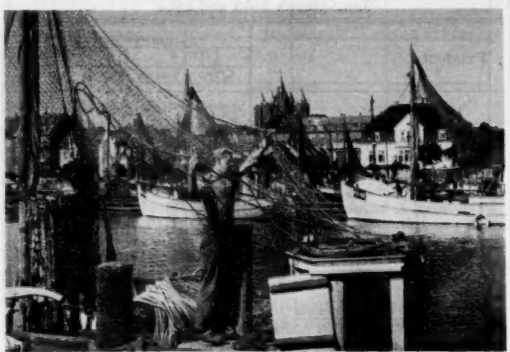

Fig. 1 - Fishing cutter docked at Kalundborg, one of the smaller Danish fishing ports.

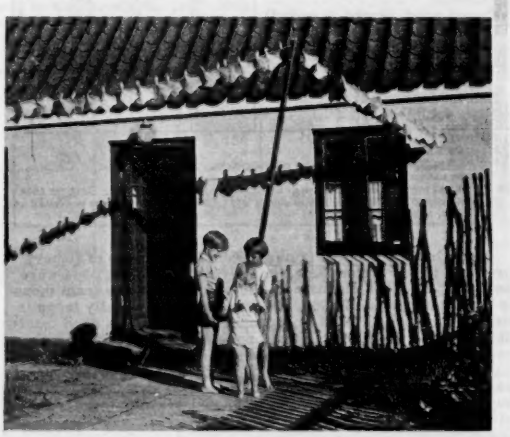

Fig. 2 - Plaice hung out for drying--dried plaice is a specialty known all over Jutland.

Denmark (Contd.):

Exports--General: Danish exports of fishery products in the first quarter of 1964 were down about 2 percent in quantity but up 12 percent in value from those in the same period of 1963. Higher prices for fresh and frozen fishery products accounted for the gain in value in spite of declining shipments. (Exports of fresh fishery products were down 8 percent in quantity, but up 11 percent in value.)

In January-March 1964, shipments to the European Economic Community accounted for about 46 percent of the value of Danish fishery exports, shipments to the European Free Trade Association accounted for 39 percent, shipments to the Communist Bloc countries accounted for 4 percent, and shipments to other countries accounted for the remaining 11 percent. West Germany was the leading buyer of Danish fishery products in the first quarter of 1964 with receipts valued at Kr. 47.2 million (US$6.8 million), followed by the United Kingdom with receipts valued at Kr. 23.5 million ($3.4 million), Sweden with Kr. 21.0 million ($3.0 million), Italy with Kr. 11.3 million ($1.6 million), Switzerland with Kr. 10.7 million ($1.5 million), France with Kr. 6.9 million ($1.0 million), and the United States with Kr. 6.8 million ($1.0 million).

Table 2 - Danish Exports of Fishery Products, Jan.-March 1963 and 1964

Product	January-March 1/1964 Qty. (Metric Tons)	1/1964 Value (US$ 1,000)	1963 Qty. (Metric Tons)	1963 Value (US$ 1,000)
To all countries:				
Fresh products	53,829	12,323	58,500	11,138
Frozen products	12,435	5,864	11,600	4,808
Processed fishery products	3,998	2,713	5,100	2,911
Fish meal & solubles 2/	12,762	1,673	9,300	1,246
Total exports to all countries	83,024	22,573	84,500	20,103
To the United States:				
Fresh & frozen products:				
Fillets:				
Cod	1,016	458	1,884	869
Other fillets	36	23	111	63
Pond trout	104	117	313	362
Norway lobster	65	177	24	76
Others	29	23	14	11
Cured prod. (smkd. & salted)	9	6	15	5
Canned products:				
Herring & sprat	161	106	176	134
Shrimp	41	57	3/	3/
Others	19	15	4/ 64	4/ 73
Semipreserved products	4	7	2	4
Fish solubles	-	-	-	-

1/Preliminary.
2/Does not include marine oils.
3/Included in "other canned products" classification.
4/Includes canned shrimp.
Note: Values reported in Danish kroner and converted to U. S. dollars. Data for 1964 were converted at rate of Kr. 6.908 equals US$1.00; data for 1963 were converted at rate of Kr. 6.906 equals US$1.00.

Exports to the United States: Danish shipments of fishery products to the United States in the first quarter of 1964 were down 43 percent in quantity and 38 percent in value from those in the same period of 1963. Declines were especially large in items which have a good European market (such as pond trout). Shipments of cod fillets in the form of blocks decreased because of an early lack of interest by United States importers. Later, a renewed United States demand could not be met because stocks had been committed to British and Continental buyers. Norway lobster shipments are becoming more significant.

On June 17 and 18, 1964, the Danish Fisheries Minister initiated a campaign in New York City to sell more fish from Denmark and Greenland in the United States. Luncheons were held for importers and food editors at the Danish Pavilion at the World's Fair. Denmark expects to continue the drive for greater sales of fishery products in the United States. (United States Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, June 24, 1964.)

Note: See Commercial Fisheries Review, July 1963 p. 73.

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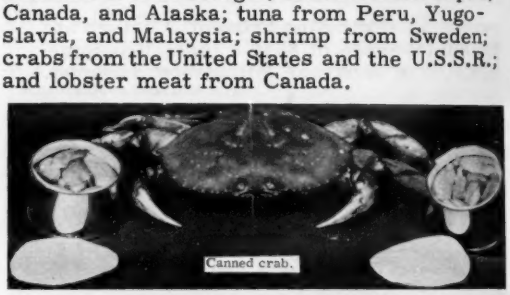
IMPORTS OF FISHERY PRODUCTS, 1962-63 AND EARLY 1964:

Danish imports of fishery products consist mostly of fresh fish (mainly herring) landed by Swedish fishing craft in the Danish ports of Skagen and Hirtshals. Much of the herring is filleted and reexported, especially to West Germany.

Canned fishery imports consist mainly of sardines from Portugal; salmon from Japan, Canada, and Alaska; tuna from Peru, Yugoslavia, and Malaysia; shrimp from Sweden; crabs from the United States and the U.S.S.R.; and lobster meat from Canada.


Canned crab.

Fish meal is imported mainly from Iceland and Norway, and fish oil from Peru and the United States.

The value of edible fishery products imported by Denmark from all countries during January-April 1964 totaled 44.9 million kroner (US$6.5 million), an increase of 18 percent as compared with the same period in 1963. Danish imports of edible fishery products from the United States for the similar period were valued at 1.5 million kroner ($213,000), up 83 percent from the same period in 1963.

Imports From United States--1963: Danish imports of fishery products from the United States in 1963 totaled 1,524 metric tons valued at US$618,400. The value was more than double that of 1962. In that year, imports were largely canned fish and did not include any industrial fishery products. Canned fish and industrial products accounted for about 90 percent of the total value of the 1963 imports.

Denmark's fishery products imports from the United States are diversified and are not generally significant except for fish oil, frozen and canned crab meat, canned shrimp, and

Denmark (Contd.):

Table 1 - Danish Imports of Fishery Products from the United States, 1962-1963

Product	1963			1962		
	Quantity	Value		Quantity	Value	
	1,000 Lbs.	Kr. 1,000	US$1,000	1,000 Lbs.	Kr. 1,000	US$1,000
Fresh and frozen:						
Salmon, fresh or chilled	21.2	83.6	12.1	1/	1.0	0.1
Salmon, frozen	32.8	142.7	20.7	-	-	-
Crab meat	28.4	191.4	27.7	19.0	133.0	19.3
Mussels	1.0	3.7	0.5	2.6	7.0	1.0
Other molluscs	2.0	7.4	1 1	-	-	-
Other	3.3	43.2	6.3	0.7	25.2	3.7
Total fresh and frozen	88.7	472.0	68.4	22.3	166.2	24.1
Canned:						
Salmon	47.7	144.3	20.9	26.9	107.0	15.5
Tuna	5.5	22.3	3.2	2.9	12.0	1.7
Shrimp	53.1	216.2	31.3	1/	0.2	1/
Crab meat	256.4	1,962.8	284.6	233.7	1,598.0	231.7
Lobster meat	2.3	34.7	5.0	2.0	23.0	3.3
Other	3.4	4.2	0.6	2.4	4.0	0.6
Total canned	368.4	2,384.5	345.6	267.9	1,744.2	252.8
Salted:						
Salmon	-	-	-	5.1	23.0	3.3
Semipreserved:						
Caviar, etc.	2.0	7.7	1.1	-	-	-
Industrial products:						
Fish oil, raw	2,693.7	1,160.9	168.3	-	-	-
Fish meal, etc.	206.2	238.7	34.6	-	-	-
Fish glue	0.7	2.8	0.4	0.7	2.0	0.3
Total industrial products	2,900.6	1,402.4	203.3	0.7	2.0	0.3
Grand total	3,359.7	4,266.6	618.4	296.0	1,935.4	280.5

1/Less than 100 kilos and $100.
Note: One kroner equals US$0.145.

frozen and canned salmon. A potential market may exist in Denmark for frozen bluefin tuna from the New England fishery. Danish canners this past summer bought Japanese yellowfin or big-eyed tuna (headed and gutted) from Italy at about $400 a ton delivered Skagen. Frozen tuna from New England might be shipped to Denmark on the small refrigerator vessels which transport cod blocks to Gloucester, Mass. There is also some interest in Denmark

Table 2 - Danish Imports of Fishery Products by Commodities, 1961-1963

Commodity	QUANTITY			VALUE					
	1963	1962	1961	1963	1962	1961	1963	1962	1961
	(Metric Tons)			(Kr. 1,000)			(US$1,000)		
Fresh:									
Fish and roe	132,432	103,723	57,675	98,151	102,771	49,320	14,232	14,902	7,151
Crustacea, squid, and octopus	555	391	424	3,372	2,836	2,134	489	411	309
Mussels	33	121	74	445	525	225	65	76	33
Salted:									
Herring, spiced	4,511	3,767	4,074	9,124	7,379	7,022	1,323	1,070	1,018
Cod, wet and dry	1,530	498	863	4,194	1,219	2,466	608	176	358
Smoked	113	126	156	318	336	474	46	49	69
Canned	1,479	1,331	1,247	11,126	9,173	7,759	1,613	1,330	1,125
Mussels, processed	32	26	29	280	151	151	41	22	22
Industrial:									
Fish meal	12,309	15,520	27,759	11,914	16,613	24,857	1,728	2,409	3,604
Herring oil, etc.	2,545	1,861	924	2,399	1,505	990	348	218	144
Medicinal oil	2,557	2,439	1,926	3,837	3,218	3,000	556	467	435
Other fish oil	19,032	17,738	20,379	12,212	14,213	21,606	1,771	2,061	3,133
Fish glue	12	17	8	38	54	32	5	8	5
Others	25,745	15,986	10,805	10,344	6,818	3,883	1,500	988	563
Grand total	202,885	163,544	126,343	167,754	166,811	123,919	24,325	24,187	17,969

Note: Products originating in Greenland and the Faroe Islands not included. Seaweed and agar not included.

Denmark (Contd.):

in importing live lobsters from Maine. Denmark's lobster catch is only about 150,000 pounds a year, but in 1963 lobster ex-vessel prices were high--an average of about $1.10 a pound.

Frozen industrial fish or fillet waste is in demand in Denmark and could be exported from New England for animal feeding on Denmark's mink farms. The f.o.b. price in New England would have to be about 1.8 cents a pound.

Imports from All Countries--1963: Denmark's fishery products imports from all countries in 1963 totaled 202,885 metric tons valued at 167.8 million kroner ($24.3 million).

Danish imports of seaweed and agar (not included with fishery products) in 1963 amounted to 403 metric tons valued at 721,100 kroner ($105,000). Portugal, Canada, and Malaysia were the largest shippers of those products--seaweed mostly from Portugal and Canada, and agar from Portugal and Japan. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, June 24, 1964.)

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MEETING PLANNED ON STRUCTURAL RESEARCH FOR SMALL VESSELS:

A meeting on Structural Research for Small Vessels is planned to be held in Copenhagen, Denmark, September 15-18, 1964, by the Danish Wood Council (Traeraadet) in cooperation with the Fishing Boat Section of the Food and Agriculture Organization (FAO). Preliminary response by member Governments of FAO to such a meeting was reported to be favorable.

A paper on the construction of fishing boats presented at FAO's Second World Fishing Boat Congress in 1959 stimulated considerable discussion among the delegates when it was discovered that wide differences existed between building rules of nearly all member nations. As a result, the need for more investigations in the matter was expressed by nearly all delegates.

In December 1962, the Danish Wood Council undertook work along those lines in the light of further information on the Danish building rules. The purpose of the work of the Danish Wood Council is to propose more suitable use of the material than the present rules prescribe, and in this way liberalize the rules to the extent possible. FAO has been interested in the work and has asked the Wood Council to arrange a special scantlings (timber measurements) meeting this year so that construction problems can be taken up in a smaller group before the Third Fishing Boat Congress is held in 1965 in Goteborg, Sweden.

Papers on the following subjects will be read and discussed at the September meeting on Structural Research for Small Vessels:

September 15: (a) Functional demands for small ships.
(b) Principles of design, especially fishing-boat constructions.

September 16: (c) Properties of materials, especially wooden materials.
(d) Methods of construction of wooden fishing boats.

September 17: (e) Can functional demands be decided through analysis of existing rules?
(f) Utilization of existing rules and methods of construction in developed areas, for use in developing countries.

September 18: Visits to Danish wooden shipyards, manufacturing plants for glued-laminated elements, etc.

It was felt that the United States should be interested in this meeting because it has no rules for scantlings of fishing vessels under 150 feet long. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, June 24, 1964.)

Ecuador

TUNA INDUSTRY TRENDS, 1963:

Ecuador's tuna industry continues to expand. A fleet of over 40 vessels with a combined gross registered tonnage of 1,500 tons now fishes for tuna from local ports. Ecuador's tuna and tuna-like landings in 1962 were estimated at 21,050 metric tons (landed weight) of which 13,260 tons were distributed fresh or frozen and 7,790 tons were absorbed by the canning industry. Skipjack made up about 80 percent of the catch and the remainder was yellowfin tuna. Most of Ecuador's tuna vessels are centered Manta, but some hail from Santa Rosa-Salinas. Generally, the vessels make one-day trips and fish with live bait. Two small purse-seine vessels have joined the Ecuadoran tuna fleet. One of the purse-seiners is a Peruvian "bolichero" (formerly used in the Peruvian anchovy fishery) and the other is a power-block seiner with an 80-ton capacity. The purse-seiners should substantially increase Ecuadoran tuna landings. Both of the new vessels will deliver their catch to a subsidiary of a United States firm which operates the only large tuna cannery in Ecuador. The cannery completed a $178,500 expansion program in mid-April 1964, which increased freezing capacity to 200 tons a day. The company has a cold-storage holding capacity of 2,000 tons. It buys tuna from private vessels at about $65 a ton. The cannery reported domestic sales in Ecuador in 1963 of almost 200,000 cases, an increase of 35,000 cases over 1962. Data on domestic consumption of fresh and frozen tuna are not available.

Exports of canned tuna from Ecuador in 1963 were down 11 percent in quantity, but only 2 percent in value from the previous year. The United States received about 92 percent of the Ecuadoran canned tuna exports in 1963 with most of the remainder going to the United Kingdom, Sweden, France, and Jamaica.

Exports of frozen tuna from Ecuador in 1963 were down 36 percent in quantity and 21 percent in value from the previous year. The United States (including Puerto Rico) received 98 percent of the frozen tuna exports from Ecuador in 1963 with the remainder going to Costa Rica.

The tuna industry in Ecuador expects to benefit from the action of the Ecuadoran Ministry of Development which authorized a Puerto Rican fisheries company to purchase tuna

Ecuador's Tuna Exports, 1961-1963

Item	1/1963		1/1962		1961	
	Qty.	Value	Qty.	Value	Qty.	Value
	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000
Frozen tuna	3,371	540	5,267	685	4,243	510
Canned tuna	1,587	975	1,787	995	2,840	1,673

1/Preliminary.

Ecuador (Contd.):

General view of the port of Manta, Ecuador.

from Ecuadoran fishermen for shipment to Puerto Rico aboard the company's 700-ton freezership Western King. For its part, the Puerto Rican company has pledged to make US$32,000 available for Ecuadoran fishing cooperatives and to construct a land-based freezing plant in Ecuador within 5 years. The firm has already financed the construction of at least 5 small bait boats to help guarantee supply. The Puerto Rican firm pays fishermen about $65 a ton for tuna. Ecuadoran Government charges for a license and matricula increase the Puerto Rican company's tuna buying costs by an additional $5 a ton. A Government Decree relieved the company from payment of export taxes.

Several other companies have been incorporated to fish for tuna off Ecuador but no actual investment has yet been made.

A clash between foreign tuna fishermen and the Government of Ecuador occurred in mid-1963 over Ecuadoran claims to extensive territorial waters and Ecuadoran licensing procedures. Foreign-flag fishing vessels have been required to purchase an Ecuadoran matricula and license before entering Ecuadoran fishing waters. (United States Consulate, Guayaquil, May 5, 1964.)

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SHRIMP INDUSTRY TRENDS, 1963:

Exports of frozen shrimp from Ecuador in 1963 amounted to 2,583 metric tons valued at US$1.7 million as compared to shrimp exports in 1962 of 2,330 tons valued at $3.0 million, according to preliminary data. The sharp drop in the value of the shrimp exports in 1963 was due to declining prices in the United States which absorbed 99 percent of Ecuador's shrimp exports. The only other buyer in 1963 was Japan which took about 16 tons. The export market is the most important factor in the Ecuadoran shrimp industry. In 1962, production of fresh and frozen shrimp in Ecuador amounted to 3,200 tons, but only 870 tons of that supply was consumed locally.

Shrimp freezing and processing in Ecuador are done by 7 firms, most of which are located in the Guayaquil area. The largest firm can process 80 tons of shrimp a month. Total direct shrimp industry employment is about 3,000 persons. In spite of the United States price decline, all the firms processing shrimp for export seem to have survived.

No major investments were made in the shrimp industry during 1963. A fleet of 150 shrimp vessels, most of which work in the Gulf of Guayaquil, has overcrowded the prime fishing grounds for the white, striped, and brown shrimp found near the surface. According to the Ecuadoran National Fishing Institute, between 70-80 percent of the catch is white shrimp (Penaeus occidentalis). Some of the shrimp vessels have moved up the coast to ports such as Manta. In 1963, the gross registered tonnage of the Ecuadoran shrimp fleet totaled 7,150 metric tons. Inadequate refrigeration equipment and underpowered winches keep the fleet from seeking red shrimp off the coast in deeper water. However, red shrimp explorations will be conducted by the Ecuadoran National Fishing Institute research vessel Huayaipe. The 73-foot vessel underwent its final sea trials late in February 1964, and began its first research trip, to the Galapagos, shortly thereafter.

The Huayaipe will also be used to chart the little understood changes which occur when the major ocean currents (which bathe the continent and the Galapagos periodically) change

Ecuador (Contd.):

course. The vessel is participating in an international effort, involving operations in Chile, Panama, and Costa Rica, which is scheduled to last until 1966. The Fishing Institute hopes to develop information which will be useful in charting the migratory patterns of fish. (United States Consulate, Guayaquil, May 5, 1964.)

* * * * *

SPINY LOBSTER INDUSTRY TRENDS, 1963:

Spiny lobster exports from Ecuador have shown a consistent and rapid rise (from 33 metric tons valued at US$47,000 in 1961 to an estimated 123 tons valued at $185,000 in 1963), although both in quantity and dollar value they continue to lag far behind shrimp and tuna exports. In 1963, spiny lobsters accounted for about 5 percent of Ecuadoran fishery exports by value. The total 1963 spiny lobster catch in Ecuador has been estimated at about 500 tons (landed weight).

Ecuadoran spiny lobsters are caught off the Santa Elena Peninsula and the Galapagos Islands. Fishing is done by net or by primitive hand methods. Satisfactory lobster traps for Ecuadoran waters have not yet been devised. Fishermen receive between $0.30 and $0.50 for each lobster, depending upon its size. On the Galapagos the going price is $0.40. Several persons have said that the Santa Elena area has been damaged by overfishing.

Ecuador's "mechanized" lobster fleet, including fishing and freezer vessels, consists of 6 vessels totaling 542 gross registered tons.

Most of the spiny lobster catch is exported as frozen lobster tails. Freezing and packing generally take place in local shrimp plants. A small freezing plant in the Galapagos processes up to 3 tons a month of spiny lobster tails. At least one exporter ships live spiny lobsters to Peru. Live spiny lobster shipments totaled 5 metric tons in 1963. (United States Consulate, Guayaquil, May 5, 1964.)

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BOTTOMFISH INDUSTRY DEVELOPMENT:

Domestic landings of bottomfish in Ecuador are estimated at about 25,000 metric tons a year with a value of about US$4 million. Fishing for bottomfish is still done mainly by small boats and canoes which fish a few miles offshore with hand lines. An almost complete absence of shore facilities in the past has hampered distribution along the coast and hampered the marketing of bottomfish in the mountainous interior of Ecuador.

With the aid of the Ecuadoran Government the local industry is beginning to attract investment which will help provide needed processing facilities. A freezing plant constructed and organized with the aid of the Ecuadoran Ministry of Development has begun marketing frozen bottomfish through distribution centers in Quito and Ambato. Domestic consumption of frozen bottomfish now averages about 7,000 pounds a week and should increase rapidly. The freezing plant can store 80 tons of frozen bottomfish. Fish are supplied by local fishermen organized into a cooperative. A 17- to 18-ounce plastic package of white fish retails in Ecuador at 4.60 sucres (approximately 25 U. S. cents).

Trucks without special refrigeration equipment carry loads of frozen fish to Quito. Reportedly, there is little deterioration during the 10-hour trip. The distribution system is to be expanded to other cities in the mountains during 1964, and eventually the Government plans to finance freezing cooperatives in several other coastal villages.

A group of Ecuadoran and United States businessmen plan to invest about $280,000 in a company located at Manglaralto, Ecuador, which will construct facilities to prepare frozen bottomfish fillets for export to the United States. Later the company may expand to process canned tuna and frozen shrimp. The company plans to conduct a feasibility study to determine the extent of the white fish stocks and to examine the industrial problems involved in the project. (United States Consulate, Guayaquil, May 5, 1964.)

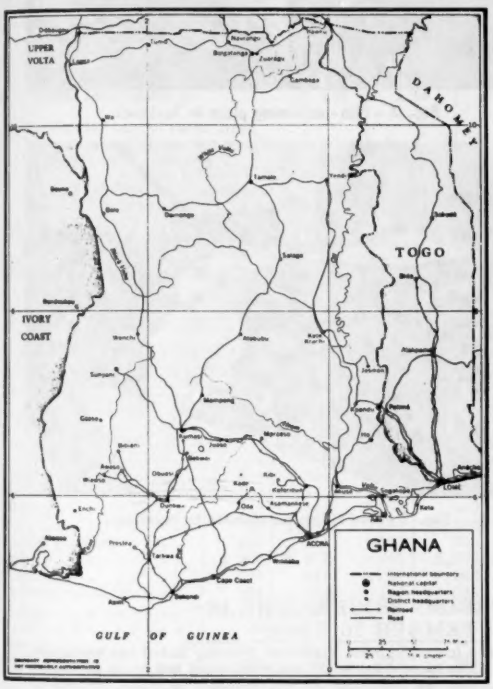
Ghana

GOVERNMENT CONTROL OF TWO PRIVATE FISHING FIRMS:

Two private fishing companies in Ghana announced in April 1964, a reorganization of their activities which results in placing them under substantial Government control. The

Ghana (Contd.):

actions stem from a Government announcement in late 1963 that all fishing activities in Ghana were to be consolidated into one of three sectors--State, cooperative, and small "peasant" fishermen.



One of the two private Ghanaian-owned fishing companies has sold 40 percent of its shares to the Ghana Government. Twenty-five percent of the remaining shares are to be held in trust for the workers of the company; 10 percent of the shares are to be held in trust for the people of Mankoadze village in the central region of Ghana. A new board of directors is to be appointed by the Government. The other private firm, formerly owned by Ghanaians, began to trade on March 31 under a different name in line with the Government's consolidation plans.

It was reported that the changes brought about by the reorganizations appear to represent a loss of control by private ownership. (United States Embassy, Accra, April 15, 1964.)

Iceland

HERRING FISHERIES TRENDS AS OF JULY 13, 1964:

Iceland's summer herring catch as of July 13, 1964, was about 153,057 metric tons, an increase of 135 percent compared with the catch of 65,392 tons in the same period of 1963. If fishing were to continue good until the end of the season (about mid-September), the summer herring catch will be considerably better than last season.

The main summer herring fishing grounds are along the northeast and east coasts of Iceland (from Glettingarnesgrunni to Gerpisflaki). Unloading facilities at those ports are not adequate to handle the seasonal peak loads and the fishing vessels either have to wait their turn or take the herring to more distant ports. Some transport ships are taking herring from the fishing vessels for transport from the east coast to less congested harbors on the north coast. Herring factories now pay 3 kronur or 7 U.S. cents per mal (about 330 pounds) into a special fund used to compensate boats for transporting herring for unloading in less congested harbors. When a harbor in a congested area is "closed," the transport to herring factories in less congested harbors brings the seller a higher price--about 37 cents more per mal. Part of this higher price (about 23 cents) is paid out of the special fund and the balance of the extra amount is paid by the buying factory.

The prices of herring meal and oil are much better than last year (1963). The main buyers are, as formerly, the United Kingdom, Norway, the Netherlands, West Germany, and Sweden. A considerable amount of herring oil has been sold ahead at £70 (US$196) a metric ton compared with £45 ($126) last year. Market conditions also are better for herring meal for which presales have been made at between 15 shillings 9 pence ($2.20) and 16 shillings 6 pence ($2.31) per protein unit. The 1963 prices ranged from 14 shillings to 14 shillings 6 pence ($1.96-2.03) a protein unit.

Advance sales of Icelandic salted herring by country as of July 13, 1964, were estimated as: Sweden 213,000 barrels; Finland 60,000; United States 22,000; Denmark 13,000; Norway 11,000; and West Germany 10,000; for a total of 329,000 barrels of about 220 pounds each.

The Soviet Union had not yet agreed to pay the prices which the Icelandic negotiators claim are the prices paid by other buyers of their herring, and the negotiations were being continued in Reykjavik. Government officials concerned with the negotiations, however, indicated they expected an agreement would be reached at existing world market prices. The current protocol between Iceland and the U.S.S.R. specifies a maximum quantity of 15,000 metric tons of salted herring.

Iceland's Catch and Utilization of Summer Herring as of July 13, 1964

How Utilized	1963	1962
	(Metric Tons)	
Salting	4,128	15,056
Freezing	2,025	1,658
Reduction (meal & oil)	146,904	48,678
Total	153,057	65,392

This year salting was begun late in the season partly because advance sales were delayed for price agreement and because the fat content of the herring, while high enough, was not firm enough for salting and such herring had to be used for reduction. (Herring is only sent to salting in quantities covered by advance sales.) Those factors, in addition to the greatly increased catch, account for the much larger quantity used for reduction during the first part of the 1964 season than in the same period of 1963. (United States Embassy, Reykjavik, July 15, 1964.)

Note: Values converted at rate of I. Kr. 43.06 equal US$1; 1 mal equals 150 kilos; barrel of salted herring 220 pounds; barrel of herring for salting 135 kilos; barrel of herring for freezing 120 kilos; barrel of herring for reduction 150 kilos.

* * * * *

Iceland (Contd.):

EXPORTS OF FISHERY PRODUCTS, JANUARY-MARCH 1964:

During January-March 1964, there was a considerable increase in exports of frozen fish fillets, fish meal, and herring meal as compared with the same period in 1963, according to the Statistical Bureau of Iceland's Statistical Bulletin, May 1964. Exports of herring on ice, frozen herring, and herring oil showed a considerable decrease in the first 3 months of 1964.

Icelandic Fishery Exports, January-March 1964 with Comparisons

Product	Jan.-Mar. 1964			Jan.-Mar. 1963		
	Qty.	Value f.o.b.		Qty.	Value f.o.b.	
	Metric Tons	1,000 kr.	US$ 1,000	Metric Tons	1,000 kr.	US$ 1,000
Salted fish, dried	535	13,714	318	1,084	21,849	502
Salted fish, uncured	2,067	32,876	765	2,003	26,252	609
Salted fish fillets	463	6,703	156	203	4,313	100
Wings, salted	219	2,837	68	100	1,215	28
Stockfish	2,390	66,820	1,597	2,258	60,553	1,405
Herring on ice	19	140	3	6,608	21,880	508
Other fish on ice	10,303	58,710	1,362	11,598	56,980	1,322
Herring, frozen	7,721	45,987	1,067	14,556	77,953	1,809
Other frozen fish, whole	792	8,773	204	1,077	13,382	310
Frozen fish fillets	11,832	252,282	5,853	9,797	190,934	4,430
Shrimp and lobster, frozen	165	16,022	372	124	12,040	279
Roes, frozen	316	6,831	158	123	2,383	55
Canned fish	45	2,235	52	93	5,716	133
Cod-liver oil	1,351	12,536	291	1,917	14,213	330
Lumpfish roes, salted	3	81	2	24	335	8
Other roes for food, salted	981	15,195	353	1,005	14,077	327
Roes for bait, salted	-	-	-	-	-	-
Herring, salted	13,905	138,314	3,209	14,180	135,257	3,138
Herring oil	4,807	38,233	887	11,044	42,276	981
Ocean perch oil	28	188	4	64	207	5
Whale oil	2,101	18,675	433	985	3,658	85
Fish meal	5,486	29,429	683	2,344	14,515	337
Herring meal	26,564	149,237	3,462	20,970	130,084	3,018
Ocean perch meal	109	621	14	-	-	-
Wastes of fish, frozen	257	1,081	25	347	1,072	25
Liver meal	143	943	22	130	908	21
Lobster and shrimp meal	87	346	8	-	-	-
Whale meal	630	3,514	82	-	-	-
Whale meat, frozen	49	378	9	6	46	1

Note: Values converted at rate of 1 krona equals 2.32 U. S. cents.

Fig. 1 - Fishing vessels alongside the main fishing pier in the Westman Islands (off southwest coast of Iceland).

Fig. 2 - Fish-processing plant in Iceland.

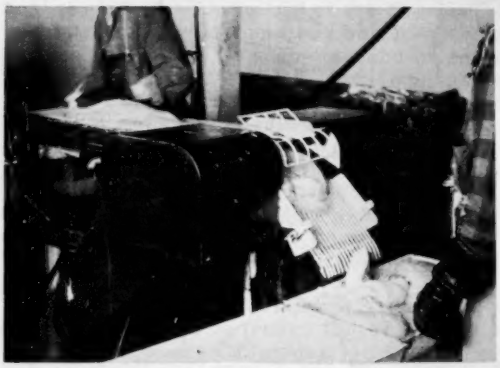


Fig. 3 - Cod fillets are skinned by machine.

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HERRING PRICES, JUNE 16-SEPTEMBER 30, 1964:

The Icelandic State Fisheries Pricing Board has announced prices to be paid for south and west coast and north and east coast herring from June 16 to September 30, 1964. Prices are based on the quantity going into production. 1/

	I.Kr. Kilo	US¢/ Lb.
South and West Coast Herring (from Hornafjordur west to Rit):		
Herring for salting	1.42	1.50
Iced herring for export 2/	1.40	1.18
Herring for filleting (pickling, freezing or salting) 2/	1.12	1.48
Herring fodder	1.00	1.05
Frozen herring, 10 percent minimum fat content (3-6 herring per kilo) 1/	1.60	1.69
Herring for reduction:		
Less than 12 percent fat content	0.81	0.85
More than 12 percent fat content	3/1.12	1.18

1/Quantity going into production is the weighed herring less quantity going into reduction. Sellers receive lower prices for that quantity going into reduction.
2/Weighed quantity.
3/Seller delivers herring to factory for I.Kr. 0.03 per kg.

Prices for June 16-September 30, 1964, are the same as those paid March 1-June 15, 1964, except that herring for reduction has been separated into 2 types. (United States Embassy, Reykjavik, July 7, 1964.)

Iceland (Contd.):

	I.Kr.	US$/bbl.
North and East Coast Herring (from Rit north to Hornafjordur):		
For each "mal" or barrel (150 liters or 298 lbs.) for reduction (Price is based on delivery into the factory's loading equipment or in loading equipment on special herring transport ships) 1/	182	4.23
Each measured barrel (120 liters or 32 gals.) for salting as unloaded from boats 2/	230	5.34
Each salted barrel (with three layers around) (average weight 135 kgs. or 298 lbs.) 2/	313	7.27
Herring for freezing (barrel containing 120 liters or 32 gals.)	230	5.34

1/In addition, the State Herring Factories pay I. Kr. 3.00 per "mal" into a special fund used to compensate boats for unloading herring in distant harbors when main harbors cannot accept the herring owing to full capacity.
2/Price is based on delivery into salting boxes.

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FISHERY LANDINGS BY PRINCIPAL SPECIES, JANUARY-FEBRUARY 1964:

Species	January		January-February	
	1964	1963	1964	1963
	(Metric Tons)			
Cod	11,074	9,546	31,077	23,773
Haddock	5,618	7,545	10,615	12,265
Saithe	533	843	2,656	1,410
Ling	789	1,098	1,834	2,185
Wolffish (catfish)	202	251	842	948
Cusk	930	1,387	1,968	3,030
Ocean perch	646	511	1,920	1,668
Halibut	101	124	197	235
Herring	30,313	48,176	64,139	61,818
Shrimp	20	73	20	131
Capelin	-	-	3,716	-
Other	466	328	893	594
Total	50,692	69,882	119,877	108,057

Note: Except for herring which are landed round, all fish are drawn weight.

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UTILIZATION OF FISHERY LANDINGS, JANUARY-FEBRUARY 1964:

How Utilized	January		January-February	
	1964	1963	1964	1963
	(Metric Tons)			
Herring 1/ for:				
Oil and meal	24,376	31,220	51,542	43,720
Freezing	4,828	8,406	9,366	8,697
Salting	1,109	4,396	3,231	4,497
Fresh on ice	-	4,154	-	4,904
Groundfish 2/ for:				
Fresh on ice	3,687	3,832	7,594	7,177
Freezing and filleting	10,030	10,604	25,583	23,493
Salting	3,608	3,107	11,002	7,341
Stockfish (dried unsalted)	1,807	2,502	5,215	5,333
Home consumption	992	1,365	2,079	2,350
Oil and meal	235	223	529	413
Capelin for:				
Freezing	-	-	133	-
Oil and meal	-	-	3,583	-
Shrimp for:				
Freezing	20	64	20	113
Canning	-	9	-	19
Total production	50,692	69,882	119,877	108,057

1/Whole fish.
2/Drawn fish.
Source: Aegir, May 1 and 15, 1964.

(Table continued on next column)

Ireland

FISHING INDUSTRY SURVEYED BY UNITED STATES FISHERY SCIENTISTS:

A survey of the Irish fishing industry was made during April-June 1964, by a team of fishery scientists from the U. S. Bureau of Commercial Fisheries. An independent appraisal of the fishing industry in that country was requested by the Government of Ireland in order to determine its potential for future growth. A draft report prepared by the Bureau's scientists was submitted to the Prime Minister of Ireland.

The Bureau's team members reported that excellent cooperation was received in the conduct of their survey and are optimistic about the future development and expansion of the

Ireland (Contd.):

Irish commercial fishing industry. Ireland has a relatively young industry. Most of the fishing vessels are less than 65 feet long, and the fishermen usually make trips of only one day. Larger vessels would increase production efficiency and stimulate trip fishing. Ireland's domestic markets are limited because of the relatively small population of 2.8 million people, but they can be expanded considerably by development of new products, introduction of improved marketing practices, and market promotion. In the past two years, the sales of newly introduced fishery products such as "fish fingers" (fish sticks) have tripled in the Irish market.

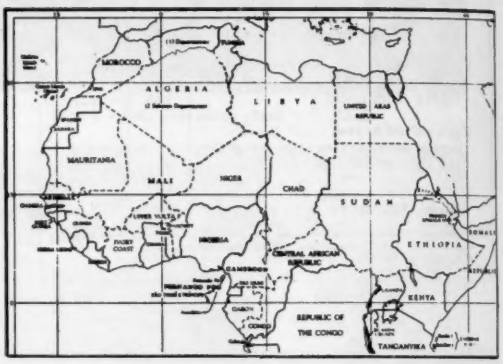
The team felt that shellfish production, catching, and processing methods could be improved so that Ireland could produce more fishery products for export to markets on the European continent, and that a fish-processing industry could be established to provide processed fishery products for domestic and foreign markets. One of the major recommendations made by the United States team was the establishment of a complete quality program that would provide for grading into sizes on the vessel and inspection of fish during all phases of the marketing chain.

Note: See Commercial Fisheries Review, May 1964 p. 46.

Ivory Coast

NEW DEVELOPMENT IN SARDINE FISHERY:

A new development in the sardine fishery of the Ivory Coast was indicated with the arrival on July 7, 1964, of the purse seiner Cap Lopez with a full load of 130 tons of sardinella. This 107-foot (550 hp.) vessel built in La Rochelle, France, in 1958, was rigged for purse seining and is equipped with a ring net of 750 meters (about 810 yards) in length, 65 meters (about 70 yards) in depth, with mesh of a stretched length of 28 millimeters (about 1.1 inches). She is the first vessel in this fishery to be equipped with brine-cooling facilities, and this maiden voyage was in the nature of an experiment to determine the feasibility of that method of holding fish for a considerable number of days. Due to seasonal movements of the Gulf of Guinea sardinella, it was necessary to go as far as the waters off Dakar, Senegal, for this catch, a distance of some 5 days. The fish were in brine a matter of 7 to 12 days on this trip, and the results were considered excellent. A negligible number of fish were bruised or chafed, but for all practical purposes the entire catch was in good condition and readily marketable.



The catch was sold by the 40-kilogram box (about 88 pounds) to eager "mammy" buyers for distribution in the Abidjan area, for drying and smoking by the many small fish-smoking houses in the area, and for overnight truck distribution to a distance of about 200 miles in the country's interior. Due to the relative scarcity of sardines at this season, the fish sold at wholesale for 2,500 CFA francs (about US$10) a box. It was estimated there were between 3,000 and 3,500 boxes, for a gross value of some 7 million CFA francs (about $28,000). This is a top price, however, and with the entry of more vessels into the fishery it is expected that a more normal price will be about 1,200 CFA francs (about $4.80) a box. The price has been known to drop to 800 CFA francs (about $3.20) a box during glut periods.

Improvements planned by the owners of the Cap Lopez, a Franco-Ivoirien company, include the installation of a power block (which will permit reduction of the vessel crew from its present 4 Europeans and 17 Africans to 4 Europeans and 10 Africans), and use of a fish pump for loading and unloading the vessel.

Fishing circles in the Ivory Coast are enthusiastic about the success of this venture--both the results obtained by the use of an offshore purse seiner in the sardine fishery, and the success of the brine-cooling method of holding the fish over a relatively long period of time. It is expected that additional vessels

Ivory Coast (Contd.):

similarly rigged will follow shortly. (Fisheries Attache, United States Embassy, Abidjan, July 7, 1964.)

Japan

EXPORT VALIDATIONS FOR FROZEN TUNA AND TUNA LOINS TO U.S., APRIL-MAY 1964:

Japan's export validations of frozen tuna and tuna loins to the United States for April-May 1964 totaled 14,047 short tons, valued at US$5,046,945 as compared with shipments of 9,348 short tons valued at $3,039,039 for the same period in 1963, an increase of 51 percent in quantity and 129 percent in value. Frozen tuna and tuna loins authorized to be shipped directly from Japan during April and May 1964 were 31 percent above the level exported during the same period in 1963; authorized transshipments were 5 percent less than those of the previous

Japan's Export Validations for Frozen Tuna to U.S., April-May 1964

Species	Direct Shipment			Transshipped			Total Direct and Transshipped		Total Validated
	April	May	Total	April	May	Total	April	May	
	(Short Tons)								
Albacore:									
Round	2,190	2,068	4,259	1,579	1,101	2,760	3,769	3,249	7,020
Yellowfin:									
Round	-	-	-	146	60	206	146	60	206
Gilled and gutted:									
20/100 lbs.	1,583	1,081	2,664	383	397	780	1,966	1,478	3,445
100 lbs. up	86	194	280	-	-	-	86	194	280
Dressed with tail	7	-	7	426	294	720	433	294	726
Fillets	-	-	-	1	-	1	1	-	1
Total	1,676	1,275	2,951	956	751	1,707	2,632	2,026	4,658
Big-eyed:									
Gilled and gutted	-	-	-	5	-	5	5	-	5
Dressed with tail	-	-	-	24	-	24	24	-	24
Fillets	2	3	4	-	-	-	2	3	4
Total	2	3	4	29	-	29	31	3	33
Skipjack:									
Round	-	-	-	408	419	827	408	419	827
Loins:									
Albacore	569	256	825	-	-	-	569	256	825
Yellowfin	578	106	684	-	-	-	578	106	684
Total	1,147	362	1,509	-	-	-	1,147	362	1,509
Grand Total	5,015	3,708	8,723	2,972	2,351	5,323	7,987	6,059	14,047
April-May 1963 Exports	2,336	1,435	3,770	3,924	1,652	5,577	6,260	3,087	9,347
Percent increase or decrease	+115	+158	+131	+24	+42	-5	+28	+96	+51

Source: Japan Frozen Food Exporters Association.

year. Albacore and yellowfin accounted for 83 percent of the total validated exports of frozen tuna and loins, of which 50 percent were albacore and 33 percent yellowfin. (Fisheries Attache, United States Embassy, Tokyo, June 29, 1964.)

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EX-VESSEL PRICES FOR ALBACORE TUNA STILL HIGH IN JUNE 1964:

At Ishinomaki and Nakaminato, Japan, ex-vessel prices of 120 yen a kilogram (US$302 a short ton) were being paid for 22-pound albacore. At Yaizu ex-vessel prices of 140 yen a kilogram ($353 a ton) were being offered for 33-pound albacore.

But Japanese frozen albacore export trade with the United States began to show signs of activity in June 1964, with offers from United States buyers coming in at $380 a ton c.i.f. However, export trade in albacore was still at a low level because of the high ex-vessel prices offered in Japan. (Suisan Tsushin, June 26, 1964.)

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SUMMER ALBACORE TUNA FISHERY:

The Japanese summer albacore fishery was virtually over by mid-July 1964, with practically all fishing vessels either getting ready to return or already en route home. This year's (1964) summer albacore fishing conditions followed a very unusual pattern. Fishing was very slow at the outset of the season, but an unusually heavy run developed toward the end of the season. In early July, a sizable albacore run suddenly developed 350-400 miles off the Sanriku (northeastern Honshu) coast, where water temperatures measured 17°-18° C. (62.6°-64.4° F.). This resulted in record catches for albacore vessels operating out of Kesennuma, Onagawa, and Ishinomaki.

Ex-vessel albacore prices in Japan for 22-pound fish were reported in mid-July at 116-120 yen a kilogram (US$292-302 a short ton) at Shimizu and Yaizu; 115-118 a yen a kilogram ($290-297 a ton) at Kesennuma and Ishinomaki; and 110-116 a yen a kilogram ($277-292 a ton) at Nakaminato. Prices of summer albacore contracted for export to the United States averaged $375 a ton c.&f.). (Suisan Tsushin, July 15, 1964.)

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SOUTH PACIFIC TUNA MOTHERSHIP FISHERY TRENDS, JUNE 1964:

The Japanese Yuyo Maru (5,040 gross tons) and Nojima Maru (8,800 tons) tuna mothership fleets fishing in the South Pacific were operating profitably as of late June 1964. Catches consisted largely of albacore and yellowfin tuna, but fishing was slowing down in late June.

The Yuyo Maru fleet, operating in the vicinity of the Fiji Islands, in early June was catching an average of about 5 metric tons a day per catcher vessel. In late June, she was averaging between 2.1-2.5 metric tons. The Nojima Maru fleet, operating in the fishing grounds south of Tahiti, averaged close to 3 metric tons a day in early June. In late June

Japan (Contd.):

it was taking an average of 2.5 tons a day per catcher vessel. (Suisancho Nippo, June 20, 1964.)

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JAPANESE TUNA EXPORTERS SEEKING MORE TRADE WITH SPAIN AND CUBA:

Japanese frozen tuna exporters, who are presently confronted with marketing problems owing to the sluggish export trade with European countries (particularly Italy), are discussing the possibility of expanding the tuna markets in Spain and Cuba. Tuna exports to Spain are presently restricted under a quota system enforced by that country, but the Japanese tuna exporters hope to seek greater trade through diplomatic negotiations. Tuna exports to Cuba are presently handled by only two Japanese fishing firms, but due to depressed tuna sales to other countries in recent months, other Japanese trading firms reportedly are showing interest in the Cuban market. However, because Cuba is a Communist country, some observers in Japan foresee difficulties in expanding trade with that country in view of the adverse effect it may have on the trade with the United States. (Nihon Suisan Shimbun, July 10, 1964.)

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JAPANESE FROZEN TUNA EXPORTS TO CUBA INCREASING:

The Japan Export Frozen Tuna Producers Association, at a meeting held on June 30, 1964, to develop measures to overcome the slump in the sales of Atlantic-caught tuna, reported that tuna exports to Cuba have sharply increased in recent months. Sales to that country contracted during April-June 1964, totaled about 3,000 metric tons. During the same period, exports of Atlantic tuna to the United States amounted to 7,397 short tons, to Italy 5,225 metric tons, Yugoslavia 4,509 metric tons, and Czechoslovakia 940 metric tons. (Suisan Tsushin, July 2 & 4, 1964.)

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FROZEN TUNA SALES TO ITALY SLOW IN JUNE 1964:

Japanese frozen tuna sales to Italy were extremely slow in June 1964 due to the tight money situation existing in Italy, coupled with the Italian packers' insistence upon yellowfin tuna. Italian packers were reluctant to buy big-eyed and bluefin tuna. This situation is said to be presenting marketing difficulties for Japanese tuna suppliers, particularly since Japanese Atlantic tuna catches have been predominantly big-eyed and bluefin tuna.

Export prices paid for yellowfin (gilled-and-gutted) deliveries to Italy in June were at US$395 a metric ton c. i. f., compared with $410 offered early this year. Dressed big-eyed tuna, which earlier this year sold for $360 a metric ton in the Italian market, has declined to around $270 a ton, with very few offers being made even at that price. Bluefin price was $330 a metric ton c. i. f. in June compared with $380 offered early this year. (Suisancho Nippo, June 29, 1964, and other sources.)

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ESTABLISHMENT OF OVERSEAS TUNA BASE COUNCIL UNDER STUDY:

The Japanese Fisheries Agency is studying the possibility of establishing an overseas tuna base council to assure the stable operation of overseas-based fisheries. The plan under study is aimed at organizing, under the Agency's guidance, a council consisting of overseas-based fishery operators to promote liaison among the operating firms and to resolve problems related to fish prices, labor, and other problems of common interest.

Reportedly, the Japanese overseas tuna bases at American Samoa, Espiritu Santo (New Hebrides), Noumea (New Caledonia), Levuka (Fiji Islands), and Penang (Malaysia) are faced with growing economic difficulties resulting from declining hook catch rates, rising labor demands, unsatisfactory price agreements, and unfavorable arrangements for settling claims arising from green-meat tuna deliveries. Those problems are said to be imposing difficulties in managing overseas base-operated tuna fisheries. (Suisan Keizai Shimbun, June 28, 1964.)

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JAPANESE NEGOTIATE WITH PORTUGUESE FIRM FOR TUNA BASE OFF WEST AFRICAN COAST:

A Japanese fishery company announced its plans to export tuna caught by Japanese vessels in the Atlantic Ocean under a business agreement with a firm in Portugal and with a United States tuna packer.

Japan (Contd.):

Under the plan, the Portuguese Territory of Cabo Verde, a group of islands off the west coast of Africa, will be used as an operating base from which frozen tuna will be shipped to Europe, the United States, and Japan.

As of mid-June 1964, the Japanese fishery company was operating 2 tuna vessels in the Atlantic Ocean. Under an arrangement with the Kanagawa Tuna-Bonito Fisheries Federation in Africa, 10 additional tuna vessels were to be added to the fleet. As of June 1964, those vessels were en route to the Atlantic Ocean area.

The annual catch of the Japanese fishing fleet is expected to total 10,000 tons. Of the total, 6,000 tons will be shipped to the United States tuna-packing firm's cannery in Puerto Rico, 2,000 tons to European markets, and the remaining 2,000 tons to Japan.

The Japanese firm has sent its representative to Sao Vicente Island of the Cabo Verde group to handle the fisheries business there. On the basis of the business negotiations, the Portuguese will provide refrigeration and land facilities at the fishing base at Sao Vicente as well as act as agent for the Japanese fishing vessels. The Japanese firm will provide the fishing vessels and handle the sale of tuna to the United States, Europe, and Japan. The United States firm will supply ships to transport the tuna to its cannery at Puerto Rico.

Until now, most of the Japanese fishing vessels in the Atlantic Ocean area have operated mainly from bases in the Canary and Las Palmas Islands. (Fisheries Attache, United States Embassy, Tokyo, June 16, 1964.)

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POLE-AND-LINE SKIPJACK TUNA FISHERY BEING STUDIED:

Major Japanese fishing companies, which are confronted with the problem of declining hook catch rates in the tuna long-line fishery, are looking into the possibility of expanding the pole-and-line skipjack fishery. In view of the abundance of the skipjack resource and the stability of skipjack prices, several fishing firms see unlimited possibilities of expanding the pole-and-line skipjack fishery through improvement in gear and fishing methods. One possibility they are considering is to replace the pole-and line fishing method with purse-seining. (Suisan Keizai Shimbun, July 5, 1964.)

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TUNA BEHAVIOR NEAR DRIFTWOOD STUDIED:

The Tokai University Fisheries Research Laboratory, which has for some time been studying the behavior pattern of tuna associated with driftwood, was planning to release 300 manmade small yellow-colored planks and logs east of the Philippine Islands in late June 1964. Commercial tuna fishing vessels (which have been cooperating in the study were on their way to the Indian Ocean) to release the manmade driftwood. The pieces of driftwood are expected to drift off the Japanese mainland between late July and December. The study is being financed by research funds from the Ministry of Education. (Suisan Keizai Shimbun, June 16, 1964.)

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TUNA FISHING LICENSES DECLINE IN VALUE:

Tuna fishing licenses in Japan in early June 1964 were selling at a premium of 350,000-360,000 yen (US$972 to $1,000) per vessel (gross) ton, or about 70,000-100,000 yen ($194-278) less than a year earlier.

The decline in market value of fishing licenses is attributed to the less promising outlook for the tuna fishery. (Suisan Keizai Shimbun, June 2, 1964.)

Note: The entry of fishing vessels in the Japanese tuna fishery is closely regulated by the Japanese Government and fishing licenses (or "rights" as they are commonly referred to) are openly traded on the open market. The premium that a license fetches depends on demand and supply.

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FISHING COMPANY TO FLY REPLACEMENTS FOR TUNA LONG-LINE CREWS:

A Japanese fishing company, which is operating five 112-ton tuna long-liners in the Atlantic Ocean and the Caribbean Sea from the base at Trinidad, is planning to fly crew replacements from Japan for its Atlantic tuna vessels. Negotiations with an airline for special rates were said to be under way, and the fishing company may start flying replacements before the end of this year.

Japan (Contd.):

The fishing company estimated that air transportation of replacements would result in additional earnings of about 10 million yen (US$27,778) per vessel. This is because each vessel would, under the plan, be able to make 3 more fishing trips for additional landings worth 15 to 16 million yen ($41,667-44,445). Deducting 6 million yen ($16,667) for round-trip flight expense for replacements (22 per vessel), the vessel would net around 10 million yen ($27,778). Moreover, air transportation would benefit the fishermen, who would be spared the discomfort of a long sea journey.

Under a similar arrangement, another Japanese fishing company, in the summer of 1963, flew 51 fishermen to the Canary Islands as replacements for crew members aboard its trawler operating in the Atlantic Ocean. (Suisancho Nippo, July 2, 1964, and other sources.)

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TANKER REFUELS TUNA LONG-LINERS AT SEA:

The Japanese oil tanker Tofuku Maru (1,983 gross tons), which departed Japan on May 13, 1964, as of mid-June had refueled on the high seas a total of 23 tuna long-line vessels. The tanker is supplying to each fishing vessel about 50-100 kiloliters of oil, 10 tons of drinking water, and provisions. She was scheduled to refuel 20 more tuna vessels at sea before proceeding to Balboa, Panama, on July 13, for fuel and provisions. (Suisan Keizai Shimbun, June 16, 1964.)

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TUNA MOTHERSHIP IN INDIAN OCEAN CONFRONTED WITH LABOR DISPUTE AT SEA:

The Japanese portable-boat-carrying tuna mothership Showa Maru No. 1 (1,076 gross tons), which had been fishing in the Indian Ocean on a six-months trip schedule, was compelled to terminate her operations one month earlier due to a labor dispute which broke out between the crew members and vessel owners. The vessel, upon returning to Shimizu, Japan, on June 25, 1964, was being investigated by the Shimizu Maritime Safety Regional Headquarters. Investigations thus far indicate the possibility of low wages and overworking of crew members as having led to the labor dispute at sea.

Under a labor agreement concluded between the owners of the mothership and the Japan Seamen's Union, crew members of the Showa Maru No. 1 were guaranteed a minimum wage of 300,000 yen (US$833.30) a trip, plus a share of the catch, with adjustments to be made if earlier withdrawal of operations became necessary or if the catch was poor. One crew member aboard the vessel expressed strong discontent over the wages paid. He felt they averaged below those paid by other smaller vessels when considering the greater output of labor demanded by large motherships.

The Japanese Ministry of Transportation, concerned over this development and other occurrences of wage disputes in the distant-water tuna fishery, directed the Maritime Transportation Bureau to develop appropriate administrative measures to ensure harmonious labor-management relations and discipline aboard fishing vessels. (Suisancho Nippo, June 29; Suisan Keizai Shimbun, June 21, 1964.)

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SOUTH KOREA ASKS JAPAN TO LIBERALIZE VESSEL EXPORTS:

At an informal conference held between the Republic of South Korea and Japan on June 24, 1964, at Tokyo, the Korean Government delegation submitted to the Japanese delegation a plan for economic cooperation between the two governments. The Korean proposal called for the liberalization of regulations governing exports of fishing vessels to South Korea, and for an increase in the Japanese import quota for Korean marine products.

Japan is reported to have taken the position that the export of vessels will not be liberalized as long as South Korea continues to seize Japanese fishing vessels. As for increasing the quota for Korean imports, Japan plans to further study the matter.

Concerning the matter of fishing vessel exports, Japan is reported as having adopted a basic policy to (1) first discuss the matter with concerned governmental agencies; (2) limit exports to wooden vessels over five years old; and (3) restrict exports to vessels which will not create an adverse effect on Japan's fishery; but South Korea must first stop seizing Japanese fishing vessels.

Japan (Contd.):

The Republic of Korea is said to be interested in purchasing from Japan over 30 tuna vessels, not to mention other types of fishing vessels, as part of the economic trade agreement. (Suisan Tsushin, June 26 & July 1, 1964.)

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NORTH PACIFIC SALMON CATCH AS OF MID-JUNE 1964:

The Japanese salmon catch in the northern waters (North Pacific, Bering Sea, etc.) by motherships as well as by land-based gill-net and long-line fleets was as of mid-June 1964 below the catch for the same period last year. The catch, as of June 15, totaled 14,000 metric tons for motherships, 15,000 metric tons for land-based gill-netters, and 6,000 metric tons for land-based long-liners. The mothership catch was running about 50 percent red salmon, followed in order by chums and pinks. (Suisancho Nippo, June 22, 1964.)

Part of a catch aboard a Japanese high-seas salmon mothership in the North Pacific area.

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MOTHERSHIP SALMON CATCH IN NORTH PACIFIC REPORTED POOR:

The salmon catch by the 11 Japanese salmon motherships operating in Area A (north of 45° N. latitude) in the North Pacific Ocean was reported poor. Landings up to early July 1964 amounted to about 24,000 metric tons as compared with the catch quota of 44,665 metric tons allotted to the mothership-type fishery. The catch is said to be running about 40 percent red salmon and 50 percent chum. At that rate, the Japanese salmon industry fears the red salmon catch for the season may be more than 10 percent below that for 1963, when red comprised about 40 percent of the total mothership salmon catch. (Shin Suisan Shimbun; Sokuho; July 9, 1964.)

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RECORD LOW SALMON CATCH EXPECTED FOR AREA B:

The 1964 Japanese land-based gill-net and long-line salmon fishing in Area B (south of 45° N. latitude) of the Northwest Pacific was brought to a close on June 30, 1964, in accordance with the agreement under the Japan-U.S.S.R. Fisheries Treaty. There is a possibility that this season's catches will be at a record low for that area. Based on 31,000 metric tons of salmon taken in Area B as of June 25, the Japanese Fisheries Agency estimates the salmon catch for that area to total about 40,000 metric tons. The estimated catch is far behind the 55,000-ton quota established for that area, and also below the 1962 poor pink salmon catch. (Suisan Keizai Shimbun, July 1, 1964.)

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HOKKAIDO CANNERS HARD HIT BY POOR SALMON CATCH:

Hokkaido, Japan, salmon canners are said to be extremely hard hit by the unprecedented poor salmon catches taken from Area B (south of 45° N. latitude) in the North Pacific this year. Of the 8 salmon packing plants located in Kushiro, Hokkaido, all but 1 had suspended operations as of June 20, 1964. Normally Hokkaido canneries are operating at full capacity in June-July, packing the "dollar-earning" pink salmon, but this year, with the scarcity of raw material pushing up pink salmon prices as high as 245 yen per kilogram (30 cents a pound), the Kushiro canners could no longer continue their operations without large losses. (Minato Shimbun, July 9, 1964.)

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PACK OF LAND-BASED SALMON CANNERS DOWN:

The canned salmon pack (for export) of the land-based salmon canners in Japan as of early July 1964 was estimated to total 200,000

Japan (Contd.):

cases of ¼-lb. pack and 50,000-60,000 cases of ½-lb. pack. For the 1964 season, the pack of ¼-lb. cans was expected to total 225,000 cases and for ½-lb. cans, 100,000 cases. In 1963, the pack of export canned salmon totaled 370,000 cases. (Suisan Tsushin, July 6, 1964.)

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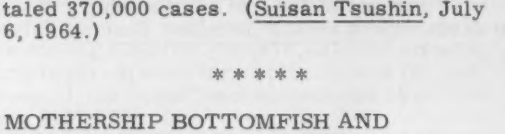
MOTHERSHIP BOTTOMFISH AND SHRIMP FISHERY IN EASTERN BERING SEA, JUNE 1964:

The 14 Japanese mothership-type bottomfish fishery fleets operating in the eastern Bering Sea had landed from 120,000-130,000 metric tons of fish as of early June 1964, exceeding last year's catch for the same period by 25 percent. The vessels operating trawl gear were doing well, but some of those fishing with long-line gear were not. Alaska pollock, cod, rockfish, and flatfish were the principal finfish landed.



Japanese factoryship Einin Maru.

The factoryships fishing for shrimp were having good fishing as of mid-June 1964. The Chichibu Maru (7,421 gross tons) arrived in Hakodate on June 16 with about 62,000 cases of canned shrimp and 7,000 metric tons of frozen shrimp. She was scheduled to return to the eastern Bering Sea in August. The Einin Maru (7,482 gross tons) had canned 90,000 cases of shrimp, or one-third of its production target as of that date. (Suisan Keizai Shimbun, June 16, and Suisan Tsushin, June 18, 1964.)

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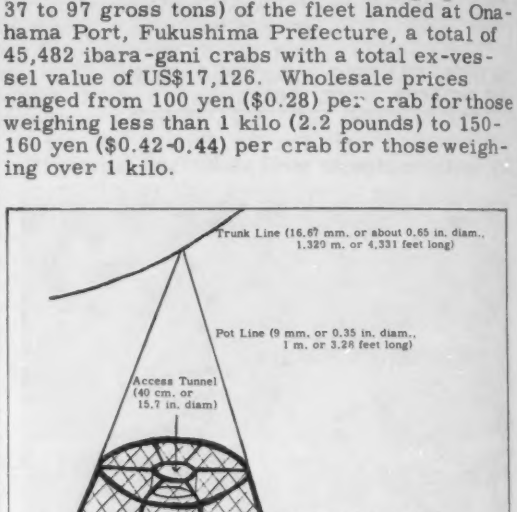
NEW CRAB FISHERY DEVELOPED IN JAPANESE COASTAL WATERS:

In mid-December 1963, commercial concentrations of a crab known as ibara-gani (Lithodes species of the family Lithodidae) were discovered 40-50 miles off the northeast coast of Japan. During January-March 1964, a total of 12 Japanese vessels fished the newly discovered grounds from base ports in Fukushima and Miyagi Prefectures. Operations were centered 30-50 miles off Shioyazaki in depths ranging from 480-500 meters (1,574-1,640 feet). Complete catch data are not available, but it has been reported that during January-March 1964, 7 vessels (ranging from 37 to 97 gross tons) of the fleet landed at Onahama Port, Fukushima Prefecture, a total of 45,482 ibara-gani crabs with a total ex-vessel value of US$17,126. Wholesale prices ranged from 100 yen ($0.28) per crab for those weighing less than 1 kilo (2.2 pounds) to 150-160 yen ($0.42-0.44) per crab for those weighing over 1 kilo.


Trunk Line (16.67 mm. or about 0.65 in. diam., 1,320 m. or 4,331 feet long)
Pot Line (9 mm. or 0.35 in. diam., 1 m. or 3.28 feet long)
Access Tunnel (40 cm. or 15.7 in. diam)
Covering (12 cm. or 4.7 in. mesh webbing)
Opening for Removal of Crabs

Crab pot used in ibara-gani fishery. The truncated-cone-shaped pot is 60 centimeters (23.6 inches) high, with a base diameter of 160 centimeters (63 inches), and a top diameter of 75 centimeters (29.5 inches). Framework is constructed of iron rods 9 mm. (0.35 inch) in diameter with the rod in the base ring 12 centimeters (4.7 inches) in diameter. The top ring is made of vinyl chloride tubing 15 mm. (0.59 inch) in diameter.

Crab pot gear is used in the ibara-gani fishery. The pots are fished in units of 30-40 pots to a string. A string of pots is fished using round bottles 12 inches in diameter fitted with bamboo poles 18 feet long as marker buoys. The buoys are equipped with radio transmitters as an aid in locating the gear. A single buoy serves as a marker for one string of pots. Rope 16.67 millimeters (0.65 inch) in diameter is used for the trunk and buoy lines. The length of the trunk line for a single string of pots is approximately 1,320 meters long. The pots are fastened to the trunk lines

Japan (Contd.):

at 30-to 35-meter (98-118 feet) intervals with rope 1 meter (3.28 feet) in length and 9 millimeters (0.35 inch) in diameter. Two anchors, either of iron or stone, secure the ends of the trunk lines to the seabed. The gear is hauled on deck amidship and, after removal of the catch, the pots are reset from the afterdeck. The total cost of rigging 4 strings of pots (40 pots per string), including replacement pots, trunk and buoy lines, buoys, and anchors, is estimated at 2-2.5 million yen ($5,555-6,944). Vessels in the fishery leave port early in the morning and return the same day. The time required for hauling and resetting 100-160 pots is approximately 10 to 12 hours. It is reported that the larger vessels in the fishery carry 12 to 13 crew members.

At first, 3 or 4 saury were hung in the pots as bait but because of the loss of bait to invertebrates and other sea animals, this method of baiting was discontinued. A perforated polyethylene cylinder (with screw cap) was later devised to protect cut-up pieces of bait consisting of frozen saury or squid. Two such baited cylinders are hung in each pot from a point near the access tunnel.

On February 29, 1964, ibara-gani fishermen of Fukishima Prefecture organized the Fukushima Crab Pot Fisheries Association for the purpose of protecting the stocks of crabs in the area. The following regulations were adopted:

1. Female crabs shall be released. However, female crabs may be retained if not in excess of 5 percent of the total catch.

2. Vessels are required to shift operations when female crabs exceed 30 percent of the total catch per string of pots.

3. Regulations 1 and 2 above are applicable to the catch of male crabs having a carapace of less than 10 centimeters (3.9 inches).

4. The number of crab pots fished per vessel shall not exceed 160.

5. The maximum tonnage of a vessel engaged in the fishery shall not exceed 100 gross tons.

6. Fishing shall be conducted in waters outside the range of the trawl fishery.

The production potential of the new fishery cannot be determined from the limited data now available. (Fisheries Attache, United States Embassy, Tokyo, July 13, 1964.)

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ATLANTIC TRAWL FISHERY, 1963:

In calendar year 1963, 34 Japanese trawlers operated in the Atlantic Ocean off West Africa. They produced a total of 92,000 metric tons of bottomfish, consisting of 39,000 tons of sea bream, 18,000 tons of "monko" squid, 7,000 tons of octopus, and 28,000 tons of miscellaneous fish (including mackerel and "merluza"). Of that total 38,300 metric tons were exported to European and African countries, as follows (in metric tons): Ghana 11,500, Italy 5,500, Nigeria 5,500, Greece 4,000, Spain 3,500, others (including Rumania, Liberia, and Sierra Leone) 8,300. These data were reported by the Japanese Fisheries Agency. (Shin Suisan Shimbun, June 22, 1964.)

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REFRIGERATED CARRIERS BEING BUILT FOR ATLANTIC TRAWL FLEET:

A large Japanese fishing company as of early July 1964 had under construction two 1,800-ton refrigerated fishery carrier vessels, scheduled to be employed for transporting Atlantic trawl catches back to Japan. The same firm is also planning to build two more similar carrier vessels for the Atlantic run. Upon completion of those 4 vessels, the firm will have a total of 6 refrigerated carrier vessels serving its Atlantic trawl fleet, including the two 1,800-ton carrier vessels (Banshu Maru Nos. 11 & 12), built earlier this year and now assigned to the Atlantic Ocean fishery. (Minato Shimbun, July 8, 1964.)

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STERN-TRAWLER CANNERY BUILT FOR SHRIMP FISHERY:

Another Japanese fishing firm is building a 3,500-ton stern trawler equipped with a canning plant, the first Japanese trawler to be equipped with canning facilities. The trawler, which was scheduled to be launched on July 23, 1964, will have a daily production capacity of 500 cases (24 8-oz. cans) of canned shrimp. Unlike factoryships which require a fleet of catcher vessels, the new vessel will be capa-

Japan (Contd.):

ble of operating independently. The firm plans to assign the trawler to the shrimp fishery in northern waters (Bering Sea, North Pacific Ocean, Okhotsk Sea) where factory-ship-type shrimp operations have often proved to be unprofitable due to the high operating costs of factoryship-type fleet operations. (Minato Shimbun, July 4, 1964.)

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FISHING VESSEL CONSTRUCTION PERMITS ISSUED JUNE 16, 1964:

On June 16, 1964, the Japanese Fisheries Agency issued permits for the construction of 21 fishing vessels: 8 wooden vessels (totaling 378 gross tons) and 11 steel vessels (totaling 6,931 gross tons). Included were permits for a 999-ton steel trawler, two 2,530-ton fish carriers, two 99-ton tuna long-liners, a 499-ton portable-boat-carrying tuna mothership and a 19-ton portable boat. (Suisan Keizai Shimbun, June 17, 1964.)

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FISHERY PRODUCTION IN 1963:

The 1963 Japanese fishery production totaled 6,697,000 metric tons (excluding whale production), according to data released by the Fisheries Statistics Section, Japanese Ministry of Agriculture and Forestry. The 1963 production was down about 160,000 metric tons from 1962 landings (which totaled 6,860,000 metric tons). For the first time since 1955, fishery production in Japan failed to maintain the steady annual growth that had been recorded until 1962.

Tuna long-line catches in 1963 totaled 532,000 metric tons, a 0.6-percent decrease from 1962. Pole-and-line tuna fishery production in 1963 with 158,000 metric tons declined 16 percent below 1962.

The distant-water trawl fishery with 793,000 metric tons of landings in 1963, showed a 14-percent decrease from 1962. This decline was primarily ascribed to reduced mothership fleet operations in the "northern waters" (North Pacific, Bering Sea, etc.) bottom trawl fishery in 1963. Catches of 113,000 metric tons from distant-water trawl operations in the Atlantic Ocean and in waters off New Zealand and Australia, on the other hand, were reported to have almost doubled those for 1962.

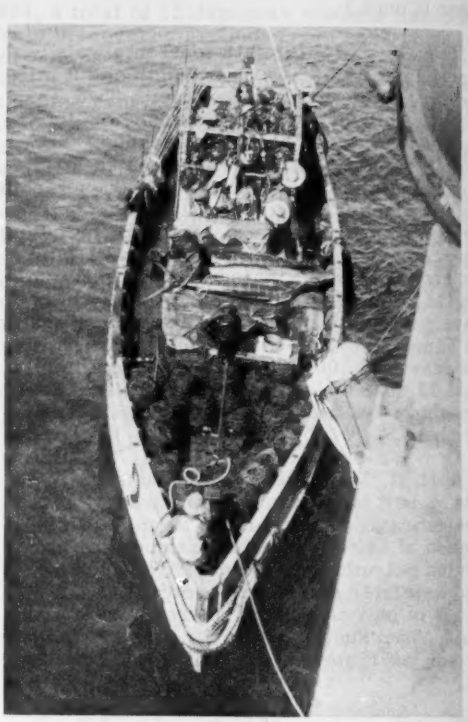

Fig. 1 - A 30-foot long-liner bringing the morning's catch of marlin and tuna to the mothership. Note skates of line forward.

A review of Japanese fishery production trends shows that from 1957 to 1961, the distant-water fisheries (pole-and-line and long-line tuna fisheries, bottom trawl fishery, and mothership-type salmon and crab fisheries)

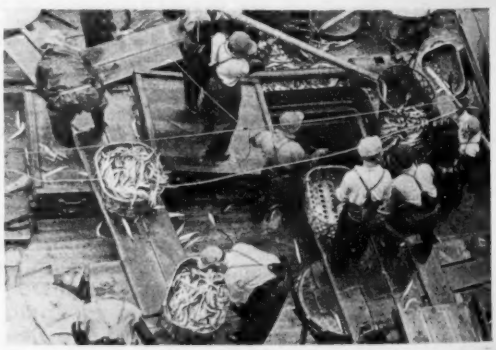

Fig. 2 - Washing and packing mackerel aboard a Japanese fishing vessel.

Japan (Contd.):

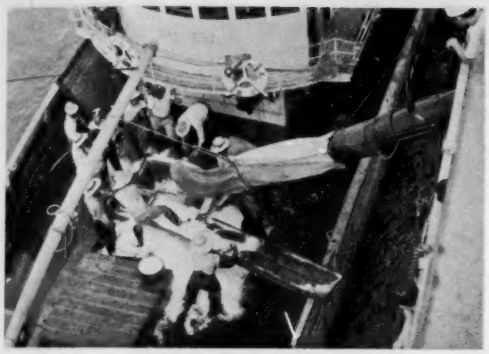

Fig. 3 - Icing a catcher boat alongside a Japanese mothership.

Fig. 4 - Repairing nets aboard a Japanese mothership.

primarily accounted for Japan's yearly production growth. Those fisheries combined showed an annual average increase of 14 percent as compared with only 5.4 percent for inshore fisheries and 2.7 percent for offshore fisheries. However, the distant-water fishery production after 1961 began to decline at a rate of 13 percent each year, and in 1963, the production of 1,520,000 metric tons was 9 percent below 1962. (Suisan Keizai Shimbun, July 4; Nihon Keizai Shimbun, July 4, 1964.)

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STATUS OF 1963 OVERSEAS-BASED FISHERIES TO BE STUDIED:

The Finance Committee of the Japanese House of Councilors (Upper House) is expected to begin a study of the status of the Japanese overseas-based fisheries in connection with tariff and labor problems. The Committee has called on the Japanese Fisheries Agency to furnish data on those fisheries, and the Agency has supplied the following data to that Committee:

Status of Japan's Overseas-Based Fisheries, 1963

Area	Vessels	Fishermen	Catch	Value	
	. . .(Number) . . .		Metric Tons	Yen . (Million) .	US$
Pacific Ocean	147	3,100	21,000	2,000	5.6
Indian Ocean	35	850	4,300	400	1.1
Atlantic Ocean:					
Tuna fishery	127	4,900	95,300	11,900	33.1
Trawl fishery	34	1,900	92,000	11,200	31.1

The amount of foreign exchange earned by the overseas-based fisheries is reported to be: Pacific Ocean 1,850 million yen (US$5.1 million); Indian Ocean 230 million yen (US$0.6 million); Atlantic Ocean (tuna) 11,380 million yen (US$31.6 million); and Atlantic Ocean (trawl) 2,640 million yen (US$7.3 million). (Minato Shimbun, June 5, 1964.)

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NEW FISHING PORT IN OSAKA PREFECTURE:

The relatively minor port city of Izumisano in Osaka Prefecture will become one of Japan's largest fishing ports if plans under consideration are developed. With the intention of reducing the transportation costs for fresh fish consumed in the Kobe-Osaka area, Osaka Prefecture has begun building a completely new fishing port at Izumisano City just south of Sakai. That area's supply of fresh fish now comes from such distant ports as Shizuoka and Shimonoseki with the result that transportation costs are high. Following the completion of Izumisano Port, fishing vessels would be able to deliver their catches practically to Osaka's doorstep.

In December 1963, Osaka Prefecture began to reclaim about 300 acres of land from the sea. It is planned that the land will be used by about 5 private fishing companies for their processing plants, refrigeration facilities, and ship maintenance buildings. The Japanese Government also plans to build a large refrigerated storage facility. Four large refrigeration factoryships of 15,000 gross tons each and 10 fishing vessels in the 3,000-ton class would be able to dock in the port at one time. Prefectural officials estimate that 170,000 metric tons of fish would

Japan (Contd.):

pass through the port annually. Railway and road connections will be constructed to connect the port with Osaka City and the rest of the Kinki.

It was reported that Japan's five largest fishing companies have informally agreed to establish plants in Izumisano, but final negotiations cannot be undertaken until the Prefecture determines the cost of the land. Such a determination is to be made upon completion of the reclamation work in about four years. Prefectural officials say the project is certain to be a success.

The cost of the reclamation project is estimated at 800 million yen (US$2.2 million) of which about $425,000 is to be financed by the national Government and the balance covered by public bonds.

Concern for the high cost of transportation and distribution of food products is reported to be growing in Japan and the Izumisano project would doubtless be a forerunner for other moves to centralize food production nearer the centers of consumption. Such developments should favorably affect prices, but they will also have the effect of bringing more people and industries into the already congested metropolitan centers.

Izumisano Port, with its centralized modern facilities, would be a further contribution, to the productivity of the already highly efficient Japanese fishing industry. This proposed project is seen as further evidence of Osaka's strong push to develop new seaboard industrial complexes and renew the area's economic strength by diversification. (United States Consulate, Kobe-Osaka, June 24, 1964.)

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FROZEN FISH SALES PROMOTION PLANNED:

The Japan Frozen Fish Association, whose objective is to promote domestic sales of frozen fishery products, held its first inaugural meeting at Tokyo on June 1, 1964. The Association plans to employ the mass media for promotional purposes and seek to improve the quality of frozen fishery products. It also plans to establish 20 model frozen fish stores in Tokyo.

The Association members include the six largest fishing companies in Japan and the National Federation of Fishermen's Cooperative Associations (ZENGYOREN). The Japanese Government is subsidizing one-half of the Association's Fiscal Year 1964 (April 1964-March 1965) budget of 40 million yen (US$111,000). (Suisan Keizai Shimbun, June 2, 1964.)

* * * * *

FISH MEAL AND SOLUBLES USED IN MIXED FEED, 1958-1963:

Japan's use of protein concentrates (all sources) in the production of mixed feed for livestock has increased almost fivefold in the last six years. Fish meal accounted for 35.2 percent of the total protein concentrates used in mixed feed in 1958, but only 27.9 percent of the total in 1963. However, fish solubles were used as an ingredient in mixed feed for the first time in 1963 and accounted for 5.8 percent of the total (see table).

Japan's Consumption of Protein Concentrate in the Mixed Feed Industry

Commodity	Year					
	1963	1962	1961	1960	1959	1958
	(1,000 Metric Tons)					
Fish meal and cake	286.4	225.7	213.3	149.4	101.3	73.2
Fish solubles	59.4	-	-	-	-	-
Vegetable oil seed meals	680.1	526.5	435.9	292.0	187.2	134.6
Total	1,025.9	752.2	649.2	441.4	288.5	207.8

The increase in usage of protein concentrates reflects the sharp upward trend that has occurred in Japan's mixed feed industry as a result of increased demands by the fast-growing livestock industry. (Foreign Agriculture, June 29, 1964, U. S. Department of Agriculture.)

* * * * *

ANTARCTIC WHALE CATCH AND PRODUCTS PRODUCED, 1963/64:

Japan's seven whaling fleets caught 4,599.83 blue-whale units during the 1963/64 Antarctic whaling season, reported the Japanese Fishery Agency this past July. Japan thus attained its quota of 4,600 units of the 10,000 blue-whale units set by the International Whaling Commission.

The baleen whale catch yielded 12 percent more oil than the target set. Other products exceeding the target were frozen whale meat (up 4 percent), salted meat (up 1 percent), and sperm whale oil (up 19 percent). (Fisheries Attache, United States Embassy, Tokyo, July 15, 1964.)

Japan (Contd.):

Japan's Antarctic Baleen Whale Catch, Products Produced, and Sperm Whale Oil Output, 1963/64 Season
(Figures in Parentheses Indicate Targets of Catch and Production)

Fleet	Products Produced					Yield of Sperm Whale Oil
	Catch	Baleen Oil	Frozen Meat	Salted Meat	Meal	
	Blue-Whale Units	(Metric Tons)				Pounds
Tonan Maru	706.00 (706.10)	13,923 (12,708)	26,190 (21,180)	1,307 (1,151)	120 -	17,017 (14,786)
Tonan Maru No. 2	715.33 (706.11)	15,218 (12,708)	25,709 (21,180)	1,270 (1,151)	120 -	15,957 (14,786)
Nisshin Maru	787.50 (761.66)	17,480 (14,471)	23,196 (21,438)	1,194 (1,164)	531 (410)	21,098 (16,790)
Nisshin Maru No. 2	746.66 (761.66)	15,250 (14,741)	21,525 (21,438)	1,178 (1,164)	1,625 (1,582)	21,281 (16,790)
Nisshin Maru No. 3	110.00 (111.15)	1,645 (2,111)	3,790 (3,128)	67 (52)	70 (64)	4,464 (2,449)
Kyokuyo Maru No. 2	848.18 (761.66)	18,210 (14,091)	23,584 (20,184)	668 (800)	1,343 (1,249)	33,510 (18,470)
Kyokuyo Maru No. 3	686.16 (761.66)	13,650 (14,091)	20,424 (20,184)	559 (692)	1,268 (1,249)	8,320 (18,470)
Total	4,599.83	95,376	144,418	6,243	5,077	121,647
Target	(4,600.00)	(84,921)	(138,734)	(6,174)	-	(102,541)

Note: See Commercial Fisheries Review, May 1964 p. 62; January 1964 p. 60.

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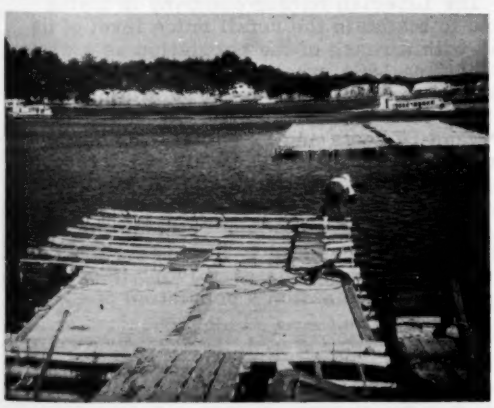
CULTURED PEARL QUALITY IMPROVED BY USE OF ANTIBIOTIC:

Modern science has come to the aid of Japan's 500-year old cultured pearl industry, and the result is healthier oysters and bigger and better pearls. The key to increased pearl production is a new technique using the antibiotic aureomycin chlortetracycline.



Pearl oyster rafts in Kashiojima Ago Bay, Japan.

A scientist on the staff of the Fisheries School of Mie Prefecture in south central Japan, in an article in the Japanese publication Fishery Science Monthly, described tests extending over 4 years in which the antibiotic boosted production of top-quality pearls by as much as 30 percent. These are the brilliant "hanadama" or "moon tear" pearls, perfect in shape and without a stain, and which over the past 70 years have been hardly 5 percent of the total yield, the scientist said.

The special aureomycin formulation, developed by an internationally known drug firm, also led to an important increase in total pearl yield, a decrease in the percentage of valueless blemished pearls, and lowered the "death rate" among weak pearl oysters.

In the new technique, both oysters and the instruments used to insert the nucleus are dipped in a solution composed of 10 parts aureomycin to one million parts of sea water. The mantle piece is dyed with 2 percent mercurochrome solution which has been diluted by sea water containing 20 parts per million of the antibiotic.

The Japanese scientist attributed the improved rate of pearl production and the higher quality of pearls harvested from treated oysters to the broad-spectrum action of aureomycin against bacteria. He decided that bacteria, which enter the oyster at the time of impregnation with the nucleus and mantle piece, adversely affect pearl formation. (Australian Fisheries Newsletter, March, 1964.)

Republic of Korea

NEGOTIATIONS FOR ADDITIONAL TUNA VESSELS:

On May 28, 1964, the Economic Ministers of the Korean Government approved an arrangement for a newly established company in Seoul, Korea, to import ten 300-ton tuna fishing vessels from a Japanese firm. Since the Korean Government decided in February 1964 not to issue repayment guaranties for private commercial loans, Cabinet approval of the transaction will be required. The value of the contract was cited as US$2.7 million in principal; terms are repayment in 10 years (after a grace period of a year and a half); with interest of 6 percent per year.

On June 2, 1964, the Foreign Investment Promotion Committee of the Korean Government approved an arrangement whereby a shipbuilding firm in Pusan, Korea, is to obtain a loan of $380,000 from a Japanese firm which will be used for the construction of 10 vessels. Two of the vessels are to be freighters of 500 tons each, while 4 are to be 140-ton long-line tuna vessels, and 4 are to be 100-ton trawlers. The Japanese loan for the Pusan shipbuilding firm must be approved by the Economic Ministers as well as the Cabinet of the Korean Government. It is understood that the Korean shipbuilding firm plans to import some components from the Japanese firm and to construct the vessels in Pusan yards. Terms call for the Japanese firm to meet its obligation within seven months after final approval of the loan by the Korean Government. Payment is to be in annual installments in the 5 years following the approval of the imported materials.

By July 1964, the Korean shipbuilder in Pusan was scheduled to complete six 145-ton tuna vessels which the company has been constructing for a Korean company under a loan from a United States tuna canning company.

The current reluctance of the Korean Government to guarantee repayment may prevent conclusion of the tentative agreements described above. The proposed new vessels would be a significant addition to the 40 vessels (totaling 5,855 tons) which private Korean companies have undertaken to procure and for which the Korean Government has guaranteed loans in the past year. Also, initial deliveries are due early in 1965 of the 91 vessels covered under the first phase of the contract with the Italian-French Consortium. (United States Embassy, Seoul, June 16, 1964.)

Liberia

FISHING INDUSTRY UNDERGOING MODERN EXPANSION:

The Liberian commercial fishing industry has experienced a spectacular development since mid-1963, the impact of which is being felt throughout the country. Liberia's largest fishing company recognized the need for increased quantities of low-priced fishery products, as well as the need for modern distribution methods in order to reach the country's inland areas. That fishing company and its affiliates is made up of Liberian interests, some members of the Liberian Government, and Danish interests. Affiliated companies in other countries include firms in Sierra Leone and Nigeria. To achieve its goals, the Liberian fishing company has taken the following major steps:

1. Contracted with about 11 foreign-flag offshore trawlers (mostly Japanese) to deliver fish that is frozen at sea to Monrovia. The frozen fish will be in boxes of 20 kilograms (44 pounds) each. Species will include mackerel, red snapper, black snapper, herting (sardinella), and sole. Monthly landings in May 1964 reached an average of close to 700 metric tons. The landings are expected to reach 1,000 tons by the end of 1964.

2. Invested in a fleet of insulated and, in some cases, refrigerated trucks for delivery of frozen fishery products in good condition to inland areas.

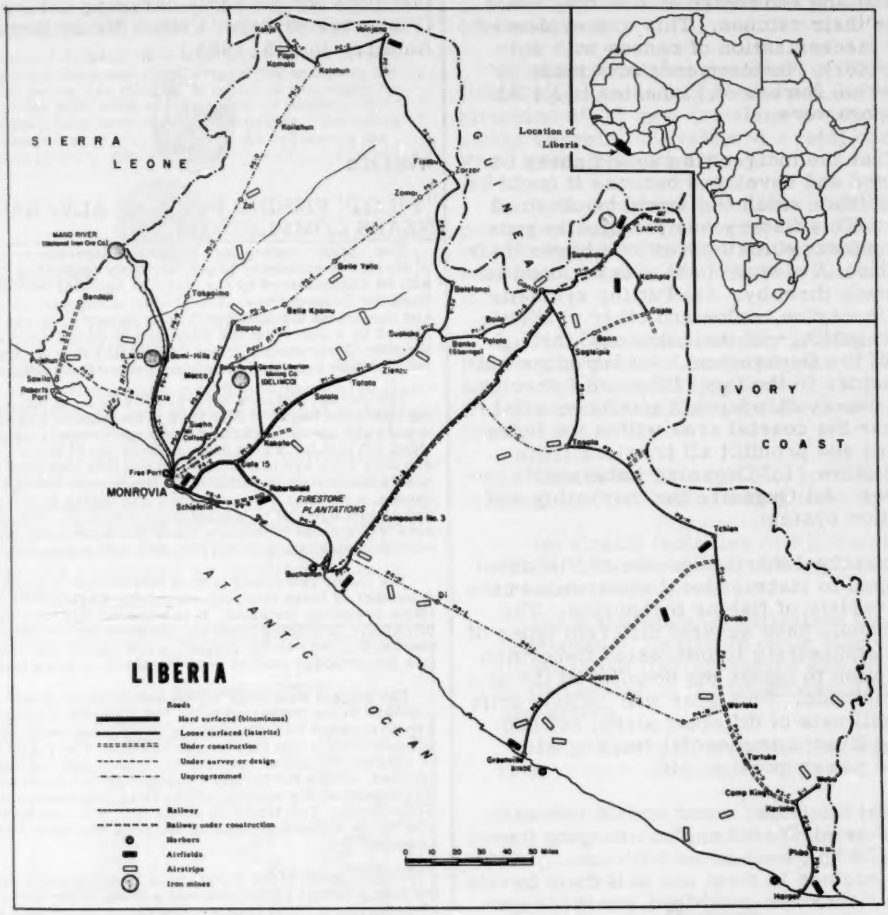
3. Built a new and modern freezing, cold-storage and ice plant at Monrovia capable of storing up to 1,500 tons of frozen fishery products, freezing up to 100 tons of fish a day and producing 30 tons of block ice a day. The cold-storage plant was to be expanded to a capacity of 4,000 tons.

4. Built 6 inland cold-storage depots (a seventh is planned) at strategic locations throughout Liberia, with storage capacities of from 20 to 120 tons each (mostly 20 to 25 tons). Those are located at the population centers and cover all of the interior of Liberia with the exception of parts of the Eastern Province, which are inaccessible until the road construction project being planned is completed.

The Liberian fishing company is trying hard to maintain the retail price level of its fish within reach of the population as a whole. As of June 1964, wholesale prices ranged from US$4.50 to $7.00 a carton of 20 kilos (10 to 16 U.S. cents a pound), with average retail prices between 15 cents and 20 cents. The demand for fishery products has been very strong, and the quantity distributed inland from the cold-storage depots was climbing steadily. Some 50 percent of the total was being distributed inland and the remaining 50 percent was consumed in the Monrovia area (containing about one-third of the nation's population of about 1 million).

Fishery landings of 700 tons in May, or 8,400 tons a year, compares with only 795 tons for all of 1963, which was a poor year, and about 1,700 tons for each of 1962 and 1961. One of the reasons for the low 1963 landings was that all of the fishing vessels of Liberia's foremost fishing company, which landed the bulk of the local catches, were transferred to Sierre Leone for repairs and servicing. Another reason was that the Libe-

Liberia (Contd.):



erian fisheries were undergoing a transition and that the formerly higher landings suddenly dropped due to a number of factors inherent to a transition period.

As of mid-1964, three smaller inshore trawlers were operating in nearby waters and landing their catches fresh. Those landings and those from the local canoe fisheries are marketed almost entirely in the Monrovia area.

Another aspect of the Liberian fisheries that was about ready to start was the landing and transshipment of tuna at the new freezer-storage plant in Monrovia. In cooperation with a United States tuna packer, the freezer plant will handle frozen tuna landed by vessels of the Republic of China (Nationalist Chinese) and Spain which are under contract to the United States tuna packer. The first of such landings were to start early in June. While most of the tuna will be frozen at sea, provision has been made to brine-freeze up to 100 tons a day in the plant to handle tuna that may be landed iced but not frozen. It was expected that most of the tuna landed there would be by bait boats.

In its Annual Report for 1963, the Liberian Bureau of Fisheries stated that there is an intense desire by local fishermen to increase

Liberia (Contd.):

their skill and knowledge so that they could increase their catches. This was evidenced in their mechanization of canoes with outboard motors. Recommendations made by the Liberian Bureau of Fisheries in its Annual Report were:

1. That the indigenous canoe fishery be maintained and developed because it could be a source from which fish could be obtained cheaper. This fishery has practically gone out of business since the trawlers began their operations. A means could also be found to better equip them by: (a) Putting synthetic materials--nylon, orlon and other synthetic lines and netting--at their disposal through the aid of the Government. (b) Introduce outboard motors in the local Liberian fisheries. (c) Set a reservation for this small canoe fisheries near the coastal area within the three-mile limit and prohibit all trawlers from trawling there. (d) Organize fishermen's cooperatives. (e) Organize the marketing and distribution system.

2. That the Liberian Bureau of Fisheries be equipped to instruct local fishermen in the greater variety of fishing techniques. The Bureau should have several different types of gear to demonstrate to interested fishermen who are keen to obtain the benefits of the new fishing methods. Such gear will include drift and set gill nets of different sizes, set and drift long lines, commercial trolling with poles and power gurdies, etc.

3. That the Government should purchase at least 6 semi-Diesel engines ranging from 25 hp. to 50 hp., have boats built locally and install 3 engines in them and sell them to Liberian fishermen on a hired, purchase system basis.

4. That local fishing boat-building projects be encouraged in Liberia. To effect this important project a foreign ship builder should be employed by the Government either in the Bureau of Fisheries or elsewhere to teach Liberians how to build seaworthy fishing boats. Also to obtain scholarships for Liberians to study in Europe or in some foreign parts.

It should be noted that the Liberian Government has been operating on an "austerity" basis because of limited funds. Government finances are expected to be much improved in about two years and the Liberian Bureau of Fisheries will receive additional funds at that time for properly carrying out its work. (Fisheries Attache, United States Embassy, Abidjan, June 5, 1964.)

Mexico

"PILOT" FISHING PORT AT ALVARADO NEARS COMPLETION:

The "pilot" fishing port project at Alvarado on the Gulf of Mexico is scheduled to open in early September 1964. It will be administered by the Mexican National Development Bank for Cooperatives. The project is expected to expand and modernize the Mexican fishing industry. It was financed by a loan from the Netherlands Government to the Mexican Government. It has been stated that the amount of the loan now exceeds 100 million pesos (US$8 million).

The project includes several activities. A major dredging operation begun in late 1962 at the edge of Laguna Alvarado has opened a channel for larger vessels and provided fill dirt for a port area of about 20-25 acres. A modern dock area has been built, and construction work is nearly completed on buildings to house cold-storage warehouses, a wholesale market area, and plants to freeze, can, and smoke fish and to manufacture fish meal. The port area will include dormitory space for fishermen, supply storage areas, and a small dry dock and repair area.

The major remaining task is installation of machinery. A number of large freezing units from England are the only items presently installed. It is believed that the remaining machinery is coming from the Netherlands. To bring added electrical power to the project, a new power line from the Dos Bocas power station near Veracruz is being installed.

The project also involves the construction of five modern trawlers in the Netherlands for the Alvarado fishing fleet. The first of the vessels, the Alvarado I, has been delivered and has been in use for several months. The vessels can be adapted to various methods of fishing, and are highly automated. Plans for further expansion of the Alvarado fleet will depend on the success of the first five vessels from the Netherlands. The facilities of the port will also be available to the many fishermen in the area who have their own vessels.

A third phase of the program is an exploratory survey of the fish potential of the area and a study of the best means of exploiting it. The trawler Alvarado I, which acts as a training vessel for local fishermen, has been making a survey of the fish stocks in various areas of the Gulf of Mexico, and has experimented with various fishing methods. The exploratory program has succeeded in locating commercial quantities of fish, including tuna, which were not previously sold on the local market. Various techniques of fishing which are useful elsewhere have been tried and modifications have been adopted. Exploratory work will continue for some time after the new port is opened.

Relatively few new permanent jobs will be created directly by the port project, as the new trawlers will have crews of only six, and the port will be highly automated. It is claimed, however, that the indirect effects will be of considerable importance. Fishermen in the area were formerly dependent on the demands of the immediate market for a limited variety of fresh fish. They now will have a means of disposing of their catch even during periods of reduced demand. Many fish caught but not previously used, such as sardines, can now be canned and marketed. Thus, even with no change in fishing techniques, the individual fisherman can improve his earnings. Proponents of the project claim

Mexico (Contd.):

that such improvement will lead vessel owners to upgrade their equipment and thus gradually improve the fleet.

The people of Alvarado have high hopes for the project. One construction firm has plans to build 200 homes in the area. Other people are thinking in terms of secondary industries for the port, such as a company to produce tin cans, and small boat construction enterprises. Secondary developments, however, will depend on the success of the primary port project. (United States Consulate, Veracruz, June 1964.)

Netherlands

REORGANIZATION OF FISHING INDUSTRY PROPOSED:

The Netherlands must land some 250,000 metric tons of fishery products annually during 1968-1970, in order to meet that country's anticipated growing demand. This is the belief of a Government-appointed committee of representatives of employers and workers in the Dutch marine fishing industry. The needed landings represent an increase of from 20 to 25 percent over the present quantity of fishery products auctioned or handled in Dutch fishing ports.

The committee was set up in 1959 to study and report on the Dutch fishing industry. The committee's report, submitted to the Netherlands Minister of Agriculture and Fisheries in February 1964, included the following recommendations:

1. A Government premium of Fl.350 (US$97) per gross registered ton for the construction of 25 new trawlers to replace obsolete vessels in 4 years at a total cost of Fl.20 million ($5.5 million).

2. A Government premium of Fl.500 ($139) per gross registered ton for the construction of 100 shrimp vessels, also replacing obsolete units, at a total cost of Fl.12 million ($3.3 million).

3. A Government subsidy of 10 percent of the auction price of certain types of fish so as to give the Dutch fishing industry a competitive chance in the European Economic Community.

4. Credit facilities of Fl.12 million ($3.3 million) for the Dutch fishing industry.

5. (a) Credit facilities of Fl. 7 million ($1.9 million) annually for replacement of obsolete fishing vessels.

(b) A thorough investigation into the prospects of fishing in other than the traditional Dutch fishing waters and protection of fish stocks in the traditional Dutch fishing waters.

(c) A thorough investigation into Dutch fishermen's working conditions.

The Dutch Government has already decided to carry out the last point of the recommendations. (United States Embassy, The Hague, March 7, 1964.)

New Zealand

LOCAL SPERM WHALING PROMISING IN EARLY 1964:

Sperm whaling in New Zealand appeared promising, announced New Zealand's Marine Minister early this year. Since an experimental season under special license began in mid-January, a firm of the Whekenur whaling station in Queen Charlotte Sound, had taken 45 sperm whales in the first few months of 1964. The whale catch had totaled 168 since the taking of sperm whales started in May 1963.

New Zealand (Contd.):

"The development of this industry and the investigations to determine the most appropriate time for an open season, are cooperative ventures by the Marine Department and the private fishing firm. The Navy and Air departments and the Royal New Zealand Air Force have helped by providing sperm whale spotting services," the Minister said.

The development of the sperm whaling industry had been forced on New Zealand because of the collapse of the humpback whale population as a result of excessive whaling in the Antarctic regions.

In 1963, the International Whaling Commission to which New Zealand belonged, prohibited the taking of humpback in the Southern Hemisphere. The New Zealand Government proposed to amend current legislation to provide for this prohibition. The only other known whaling stock around the New Zealand coast was a relatively small population of bryde or sei whales off the Hauraki Gulf. The prospects of further expansion beyond the area of exploitation could be based only on sperm whales of a different population to that being caught--from another land station. (The Fishing News, March 26, 1964.)

Nigeria

SHRIMP RESOURCES PROMISING:

Shrimp landings from Nigerian waters during June 1964 have indicated that the coastal waters of Nigeria may contain substantial shrimp resources which could be profitably exploited by experienced shrimp fishermen using efficient gear and vessels. The presence of commercial quantities of shrimp in those waters had not previously been demonstrated.

A fishing cooperative in Lagos, assisted by a fisheries adviser of the U. S. Agency for International Development (USAID), tried an American-built shrimp net for the first time in waters 12 to 20 miles south to southeast of Lagos harbor. The vessel used was an 80-foot trawler (180 hp.) towing a 60-foot Biloxi semi-balloon shrimp net. A Food and Agriculture Organization (FAO) gear specialist was aboard the vessel. The first trip in 3 days of fishing netted about 1,000 pounds of shrimp (probably white Penaeus setiferus) averaging 21-25 count (heads-off). A "tickler chain" was added and production increased to 2,000 pounds in 3 days, representing about 15 two-hour tows. It is probable that a more experienced crew, and a vessel using two nets, could increase this catch substantially. The depth of water in the area covered was 14 to 16 fathoms. Fishing was conducted both day and night, with catches by day somewhat better than those at night. Substantial quantities of mixed fish (including sole, croaker, and sardinella) were caught along with the shrimp. More than 75 percent of the shrimp caught have been 21-25 count (heads-off), with smaller quantities of 16-20 and 26-30 count.

The cooperative is marketing the shrimp in the Lagos and the western Nigeria area through Nigerian market traders, major food distributing companies, and its own refrigerated trucks. Small quantities are deheaded, deveined, and packaged in one-pound packages for the department store trade. Samples have been flown to Barcelona, Spain, and successfully marketed there. In the Lagos market, the cooperative's current selling price is about 7 shillings (98 U.S. cents) a pound for the peeled and deveined product.

Plans are under way for further work with two shrimp nets of larger size, also ordered from the United States. Although the Continental Shelf is narrow along the Nigerian coast, the coast line is some 500 miles long. (U. S. Embassy, Lagos, July 11, 1964.)

Norway

EXPORTS OF CANNED FISH, JANUARY 1-APRIL 13, 1964:

Norway's total exports of canned fish during January 1-April 11, 1964, were down 5.8 percent from those in the same period of 1963. Shipments of canned small sild dropped 17.7 percent and those of kippered herring were down 16.6 percent. But shipments of canned brisling increased 10.7 percent from the same period a year earlier, and there were some increases in the exports of several other canned fish products.

The packing of sild started in early May. Small sild ran to relatively large fish this year and were suitable for packing only as sild-sardine. Packing of brisling started on

Norway (Contd.):

Norwegian Exports of Canned Fish

Product	1/1/1-4/11 1964	1/1-4/13 1963
	(Metric Tons)	
Brisling	1,757	1,587
Small sild, smoked	3,530	4,287
Kippered herring	822	986
Soft herring roe	332	104
Sild delicatessen	131	121
Fish dinner foods	180	210
Shellfish	503	408
Total	7,255	7,703

1/Preliminary.

June 1. Norwegian canners and brisling fishermen had reached an agreement on the brisling price for the 1964 season. (Norwegian Canners Export Journal, May 1964.)

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FISHERIES TRENDS, MAY 1964:

Fisheries Price Supports: Negotiators for the Norwegian Government and representatives of the Norwegian Fishermen's Association have agreed on increased Government supports for the fishing industry during the next two years. The agreement, if approved by the Norwegian Parliament, will raise direct fishery price support funds from Kr.85 million (US$11.9 million) to Kr.90 million ($12.6 million) per year; grant a lump sum of Kr.10 million ($1.4 million) to a new social fund that will partly cover the costs of social insurance plans for fishermen; and provide Kr.5 million ($0.7 million) per year to assist in modernization of fishing fleets. In addition, the new agreement would increase the annual costs of the fisheries subsidy program (excluding some small boat and equipment subsidies) by Kr.20 million ($2.8 million), or about 23.5 percent a year. The fisheries support increases, if approved by Parliament, will result in about the same income gain for fishermen as was granted wage earners in May 1964 by the Norwegian State Arbitration Board.

Norway to Participate in Indian Fisheries Institute: On the request of the United Nations Food and Agriculture Organization (FAO), Norway will participate in establishing and operating a fisheries training institute in Bombay, India. The Institute is designed to train university graduates in fisheries administration. It will take qualified candidates from various countries in Southeast Asia as well as from India. The Norwegian Agency for International Development has concluded a contract to take over FAO's responsibilities in the project. Norway will provide an advisor to the Indian-appointed director of the Institute, a professor in fishery technology, and a professor in fishery economy. Norway will also supply a 40-foot fishing vessel, fully equipped, as well as scientific and other equipment for laboratories, workshops, and a library. Norway's contribution will be supplemented by financing from the Indian Government and the United Nations Special Fund. (United States Embassy, Oslo, June 9, 1964.)

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STERN TRAWLER DESIGN PRODUCED BY COMPUTER:

By feeding a computer with relevant facts about fishing vessel operation, a stern trawler design was produced. According to the facts revealed by the computer, 14 vessels built according to the design would be able to outfish 18 trawlers and 10 or 12 long-liners.

This was the conclusion reached by a Norwegian firm which was asked in August 1964 by a Hammerfest, Norway, fish-freezing firm to design a trawler to suit the freezing company's requirements.

The design consultants fed an electronic data handling machine with a series of facts, including catch results, weather conditions, the occurrences of fish on the grounds and during which seasons, and comparative figures on processing on shore and at sea. With this, and other information, it was able to deduce from the machine the average value per pound of catch landed over a year of 330 working days. Three designs (for a 300-, 400-, and 500-gross-ton vessel) were produced, and the machine calculated that the 400-ton vessel would produce fish slightly cheaper than the 500-ton one. However, it was decided that the 500-ton vessel would prove most suitable as it would produce more fish in the slack season and would land the greatest total during the year.

A director of the firm of consultants said that 14 of the 500-ton stern trawlers would supply the fish-freezing firm's present demands. At present that firm uses 18 trawlers and 10 or 12 long-liners to achieve the results forecast for the 14 stern trawlers.

Other facts produced by the computer included the speed of the vessel--12 knots; a 24-hour tie-up between trips; and a cargo capacity of 116 tons of boxed fish.

Norway (Contd.):

The computer also produced statistics which indicated the best grounds on which the vessels should work at given times of the year. They will operate most profitably if they work off Western Finnmark in January and February, off Eastern Finnmark in March, at Bear Island during the following 4 or 5 months, and in Spitzbergen waters during the remaining part of the year. The daily income of each vessel was electronically calculated at 1,814.11 kroner (about US$254) for fish and 500 kroner ($70) for meal and oil.

The machine's findings were checked with available statistics which had been obtained in practice and were found to be accurate. (World Fishing, April 1964.)

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FISHING FOR DOGFISH AND BASKING SHARK OFF GREAT BRITAIN TO BE CONTINUED:

Norwegian fishermen will be permitted to continue fishing for traditional dogfish (Acantis vulgaris) and basking shark (Cethorinus maximus) in certain defined area between 6 and 12 miles off the coast of Scotland until January 1, 1965. This will be in accordance with a proposal signed by the Norwegian and British delegations in the recent negotiations in London concerning the Norwegian fishery within the new 12-mile fishery boundary of Great Britain. The proposal will have to be approved by the two governments before coming into effect.

Until January 1, 1965, the Norwegian dogfish fishery may take place in the areas between 6 and 12 miles off the coasts of the Flannan Islands, the Shetland Islands, the Fair Isle, the St. Kilda Group, North Rona, Sulisker, Sule Skerry, and Stack Skerry. The basking shark fishery may be carried on in the same areas and, in addition, in the area between Runair in the Hebrides and Mull of Oa on the Islay Island.

Norwegian fishermen will further be permitted to carry on their dogfish and basking shark fisheries between 3 and 6 miles off the coasts of the defined islands until January 1, 1966.

At the London negotiations the delegations further agreed to include a most-favored-nation clause in the treaty securing Norway the same rights to fish for dogfish and basking shark in the defined areas as might be extended to third countries.

Jurisdiction over the fisheries in the period of transition will be based on the North Sea Convention of 1882 or on possible other international agreements signed by Norway and Great Britain during the period. As far as fish conservation measures are concerned, Great Britain cannot impose any regulations limiting the Norwegian rights in the period covered by the agreement without the consent of the Norwegian Government.

Judged by the reaction voiced through the press, it was considered that the Norwegian delegation obtained satisfactory results for the fishing interests of its country. Norwegian fishing off the coast of Great Britain has traditionally largely been limited to dogfish and basking shark in the areas covered by the agreement. To compensate for the rights granted to Great Britain for fishing in the areas between 6 and 12 miles off the entire coast of Norway for 10 years, the corresponding Norwegian rights in the waters of Great Britain have been extended to 20 years. (United States Embassy, Oslo, July 19, 1964.)

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SEALING EXPEDITION TO THE ANTARCTIC:

A sealing expedition to the Antarctic left Bergen, Norway, July 18, 1964. The main purpose of the expedition, the first Norway has sent to the Antarctic in this century, is to survey the possibility of large-scale sealing in those waters. The expedition which is sponsored by a Bergen manufacturing and trading firm, consists of the sealing vessel Polarhav and one helicopter. Studies of the Antarctic seal herds will be conducted by a scientist from the Norwegian Ocean Research Institute in Bergen.

The search for new hunting grounds for Norwegian sealing is a reflection of the diminishing stocks of seals in traditional hunting areas in the Northern Hemisphere, according to the Norwegian firm sponsoring the expedition. (United States Embassy, Oslo, July 21, 1964.)

Panama

SHRIMP FISHERY TRENDS, 1963:

Panama's shrimp production in 1963 fell almost one million pounds short of the record 1962 mark, despite the fact that there was a greater number of vessels operating. The Fisheries Office reports a total catch of 12,309,714 pounds, compared with 13,284,031 pounds in 1962. The 1963 production compares more favorably with production prior to 1962, and actually exceeding the previous peak year of 1961 by almost 200,000 pounds.

Table 1 - Panama's Shrimp Production (Heads-off with shell), 1961-1963

Species	1963	1962	1961
	. . .	(1,000 Lbs.)	. . .
White	3,463	4,558	4,625
Pink	3,901	3,402	2,586
Titi	5,287	4,814	4,444
Tiger	659	510	461
Total	12,310	13,284	12,116

Production of the small titi and tiger shrimp rose during 1963 by 473,209 pounds and 148,737 pounds, respectively. Those gains were more than offset by a drop of 500,966 pounds in the pink shrimp catch and a more serious decrease of 1,095,297 pounds in the catch of the premium-priced white shrimp. Industry sources believe that the normal rise and ebb of the shrimp supply can account for some of the decline in production, but also contend that there have been too many vessels operating in recent years, which has resulted in overfishing.

Panama (Contd.)

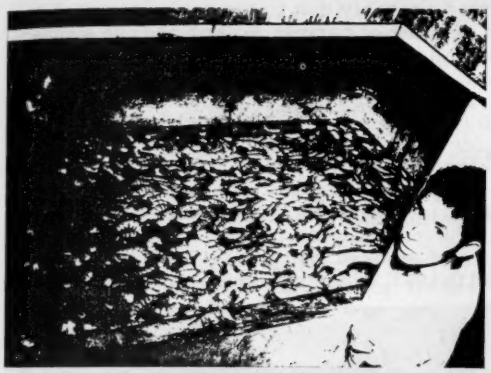

Fig. 1 - Shrimp in a brine-freezer tank aboard a Panamanian shrimp trawler.

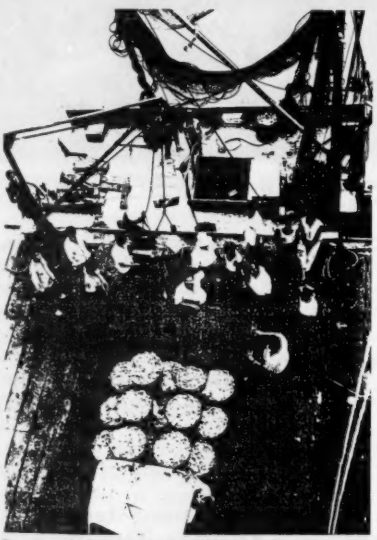

Fig. 2 - Unloading a shrimp trawler at a pier in Panama City.

Despite the existence of legislation restricting the number of shrimp vessels to 160, there were as many as 210 vessels operating in 1963. The source of illegal licensing has apparently been uncovered, however, and the Fisheries Office has stated that the practice has stopped.

The shrimp industry, although set back by a combination of lower production and falling prices in 1963, remains financially strong, and the outlook for 1964 is optimistic. Modernization of vessels and equipment is continuing. Production in the early months of 1964 was reported ahead of 1963.

As in the past, the entire shrimp catch, with the exception of minor local sales, was exported to the United States. A combination of lower prices and the considerable decline in the premium-priced white shrimp catch resulted in the f.o.b. value of Panama's 1963 shrimp exports tumbling more than 23 percent from the record mark of 1962. Total f.o.b. value for 1963 exports was US$6.08 million as compared to $7.94 million for 1962 exports.

Table 2 - Value (f.o.b.) of Panama's Shrimp Exports, 1958-1963

	Million US$
1963	6.08
1962	7.94
1961	5.85
1960	4.99
1959	5.10
1958	5.61

The bulk of Panama's shrimp catch is transported by sea. Processing is limited to peeling, removing the sand vein, and then packing for shipment. The more than adequate sea transportation facilities are a positive factor for Panama's shrimp industry. One firm, located in Chiriqui Province near the Costa Rican border, does fly its production to Miami. (United States Embassy, Panama, June 2, 1964.)

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SPINY LOBSTER AND SCALLOP FISHERIES:

A small number of spiny lobsters are taken in Panama each year in the Bocas del Toro area on the Atlantic Coast, but no expansion of that operation is contemplated. Optimism for a much larger spiny lobster industry and for the development of a scallop industry, that blossomed for a time in 1963, seems to have disappeared completely.

The Bocas del Toro spiny lobster production in 1963 amounted to about 75,000 pounds, according to an unofficial estimate from the Fisheries Office. Some of that production was flown in small shipments to the United States, with the balance marketed in Panama.

Beginning in June of 1962, an exploratory program was undertaken, with USAID financing, to determine the potential for commercial exploitation of spiny lobsters in Panama's coastal waters. The program was extended in June 1963, but finally cancelled in December 1963. In the opinion of USAID, there was not sufficient interest shown by the Panamanian fish industry to justify further research.

The survey did produce a few promising signs. A few individuals have since made some limited, but as yet unsuccessful, attempts to further explore the commercial possibilities of spiny lobster fishing in the Gulf of Panama. It is the contention of at least one authoritative source in the industry, however, that, while there might be some possibilities for successful exploitation on a very small scale, there was nothing in the survey's findings to justify any hopes for a large-scale operation.

One unexpected development of the spiny lobster survey was the discovery, in September 1963, of large beds of scallops in the Gulf of Panama. One of Panama's largest shrimp firms attempted to capitalize on that finding and met with some initial success, harvesting 50,000 pounds in the period of a few months. Sharply dropping prices rendered further efforts unprofitable, however, and no further attempts have been made to exploit that fishery. The scallops taken were small by comparison with United States scallops. From an original price of 65 cents a pound, f.o.b. Panama, the price dropped in a few months to a point where the wholesale price in New York was 52 cents a pound. Attempts to open European markets were unsuccessful. In the opinion of the firm's manager, there is no doubt that the beds discovered are extremely extensive; but, based on the firm's experience, he does not believe that commercial exploitation is feasible, at least not if shrimp vessels with their expensive overhead are used to harvest the scallops. (United States Embassy, Panama, June 2, 1964.)

Poland

FISHERY TRENDS IN 1964:

"Gryf" Deep-Sea Fishery of Szczecin started operating its first "B-23"-type freezer stern-trawler, the Barwena, at the beginning of April.

By the end of April 1964, the sprat fishing season in the Baltic had commenced. This year's season (different from former seasons) saw dense sprat shoals in the open waters of the South Baltic, and none in the Bay of Gdansk.

In the years 1966-1970, fisheries will receive from Gdansk Shipyard more vessels than it was assumed. One enterprise will receive 19 factory-trawlers of the "B-15"-type as against the planned 15 units.

In the years 1966-1970, the funds to be spent for the extension of cold-storage plants, ports, fish meal factories, ice factories, etc. will total 1,148 million zloty, whereas only about 600 million zloty were allotted for this purpose in the years 1961-1965. (Polish Maritime News, June 1964.)

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FISHERIES TRENDS AND EXPORTS IN 1963:

Poland's fishing industry and processing of fishery products were expanded in 1963 as a result of new investments which boosted that country's fishery economy. Poland, formerly an importer of fishery products, has become an exporting country. One large Polish import-export firm traded with a growing number of foreign countries in 1963, and has been increasing both its foreign trade and variety of fishery products for export.

In 1963, Poland exported 1,700 metric tons of fresh, frozen, or live fish, 390 tons of smoked fish, 3,500 tons of canned fish, and a smaller quantity of salted fish.

Exports of fresh-water fish, most of which are live, wet, or frozen, consisted mainly of eels, carp, perch, and pike. Eels from Poland have become especially popular in foreign markets. Poland's eel production has increased considerably because of its stocking program in reservoirs. In 1963, a total of more than 600 tons was exported.

Despite the abundance of carp found in most European markets, the foreign demand for Polish carp is very good because of its high quality and the fine texture of the meat. This is reported probably due to the care exercised in the rearing of carp in Poland and the supplements added to their natural food.

The leading and most valuable item in frozen fish exports is salmon, which is sold either for direct consumption or for further processing (smoking). Polish salmon, in particular, the so-called "Vistula" salmon, are highly regarded in foreign markets because of its excellent flavor and good preparation. Poland's exports of smoked fish are relatively new. Initiated in 1961, exports of twice cold-smoked herring and herring fillets reached 390 tons in 1963. The production of smoked fish by fish-processing plants in Gdynia and Koszalin is done with modern techniques consisting of a tunnel system for drying soaked salted herring and for their smoking afterwards in large chambers or tower ovens. Twice cold-smoked herring are delivered to receivers in wooden cases (contents of each being 6.8 kilos or about 15 pounds). Herring fillets are packed in plastic bags (contents 140 grams or about 5 ounces) containing 30 bags each.

A Polish fish-canning plant in Gdynia. Preparing herring for hot smoking.

Canned fish is the leading item in Poland's fishery products exports. They are packed by special state-owned and cooperative factories located at the sea fisheries ports of Gdynia, Gdansk Leba, Ustka, Szczecin, Swinoujscie, and other ports, as well as in the lakes regions or in pond fish-breeding centers such as Gizycko, Chojnice and Krakow. In 1963, technical-organizational improvements were made in several canning factories with a view to increasing the quantity and enlarging the variety of species packed, as well as to attaining uniform standards of high quality.

Special stress has been laid on the problem of mechanizing production, modernizing the

Poland (Contd.):

machines, and introducing the latest methods of production technology. As a result of providing the factories with such up-to-date arrangements as tunnels for continuous mechanical evaporating of fish, heaters, sauce homogenizers, colloidal sauce and pie mills, mechanical sprat sorters and automatic sprat wire threading machines (for smoking), it was possible to arrange special production lines in those canning factories. This resulted in greater production capacities and the attainment of a more uniform and larger variety of canned fishery products suitable for transporting and storing even under tropical conditions.

Poland's most outstanding modernizing work was completed in 1963 at a fish processing plant in Gdansk. As a result, the production of canned fish there rose by nearly 100 percent, up to 3,000 tons a year. Modernization was also initiated in Poland's largest fish-processing factory at Gdynia. After its completion, that factory's output is expected to increase by nearly 70 percent to 5,000 tons of canned fish a year. There will also be a corresponding growth in that plant's production for export.

A wide variety of fishery products offered and supplied by Polish fish canneries to nearly 30 countries throughout the world include such products as sprats in oil, brisling in oil, sild sardines, fish-liver paste, herring in oil, cod liver (in own sauce), mackerel in tomatoes, herring in tomatoes, flounder in tomatoes, stuffed carp, sprats in spicy oil, bream in tomatoes, herring and mackerel fillets in various sauces, eel in oil, and various other fishery specialties of the hors d'oeuvre type. They are packed in various size cans (round, oval, rectangular, etc.) with net weight of the contents ranging from about 3 ounces to nearly 1 pound.

Polish fish-processing plants adjust their production to the actual requirements of their customers and try to fill their export orders to exact specifications.

In 1963, Poland started selling and delivering fish to West African ports by vessels operating in central Atlantic fishing grounds. Polish fishing units operating in that region found a good market potential in Nigeria and Ghana. In 1963, the Polish Board of Fishing Industry delivered several thousand tons of fish, both frozen and wet, to markets in West Africa. Species included red snapper, horse mackerel, and mackerel. The demand for fish in West African countries is considered very good and the Polish fishing industry believes it is possible to increase such exports considerably.

The Polish fishing economy in 1963, with respect to production and exports was considered, on the whole, as prosperous and profitable. The Polish fishing industry was believed to have made good progress during 1963 in meeting its long-range goal of placing Poland among the leading European producers of fishery products. In addition to increased fishery landings and greater output of processed fishery products in 1963, progress was seen in the improved quality of products offered for export. (Polish Maritime News, June 7-12, 1964.)

Note: See Commercial Fisheries Review, June 1964 p. 55, March 1964 p. 66, February 1963 p. 86.

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FISH MEAL PRODUCTION, 1963:

Polish factory-trawlers in 1963 produced 2,257 tons of fish meal, while factories ashore manufactured 4,720 tons of fish meal and 2,851 tons of fish "pulp."

According to this year's target, factory-trawlers are to produce 3,930 tons of fish meal, factories ashore to manufacture 3,770 tons of fish meal and 3,020 tons of fish "pulp." (Polish Maritime News, June 1964.)

Portugal

CANNED FISH EXPORTS, JANUARY-MARCH 1964:

Portugal's total exports of canned fish in oil or sauce during the first quarter of 1964 were at the same quantity level as in the same period of 1963. Sardines accounted for 81 percent of the total canned fish exports in the first quarter of 1964, followed by anchovy fillets with 7 percent, mackerel 5 percent, and chinchards 4 percent.

The canned sardine exports in January-March 1964 were up 3 percent from the same quarter in 1963 and exports of chinchards were double those of a year earlier. Exports of canned mackerel for the period were 36 percent

Portugal (Contd.):

lower than in 1963 and those for anchovy fillets dropped 24 percent from the same period a year earlier.

Portuguese Canned Fish Exports, January-March 1963-64

Product	January-March			
	1964		1963	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	14,055	739	13,607	716
Chinchards	674	35	331	17
Mackerel	878	34	1,361	54
Tuna and tuna-like	360	11	457	15
Anchovy fillets	1,138	114	1,506	151
Others	245	12	70	4
Total	17,350	945	17,332	957

Portugal's principal canned fish buyers during the first quarter of 1964 were Germany with 3,238 metric tons, followed by the United Kingdom with 2,333 tons, France 2,316 tons, the United States 1,788 tons, Italy 1,497 tons, and Belgium-Luxembourg 1,280 tons. Germany's 1964 purchases of canned fish from Portugal increased 25 percent from those in the same period of 1963, the United Kingdom up 21 percent, and France up 40 percent. Purchases by the United States and Italy were down 19 and 42 percent, respectively, from the same period in 1963. (Conservas de Peixe, May 1964.)

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CANNED FISH PACK, JANUARY-MARCH 1964:

Portugal's total pack of canned fish in oil or sauce for the first quarter of 1964 was up 123 percent as compared with the same period in 1963. The substantially increased pack over the same quarter in 1963 was mostly due to the large pack of sardines which accounted for 56 percent of the total January-March 1964 canned fish pack. The canned tuna pack was nearly five times greater than in the same period a year earlier, and the chinchard pack was up sharply from the same period in 1963. (Conservas de Peixe, May 1964.)

Portuguese Canned Fish Pack, January-March 1963-64

Product	January-March			
	1964		1963	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	3,358	177	1,177	62
Chinchards	225	11	9	-
Mackerel	198	8	32	1
Tuna and tuna-like	998	33	178	6
Anchovy fillets	1,008	101	1,289	128
Others	218	11	13	-
Total	6,005	341	2,698	197

South Africa Republic

EXPLORATORY FISHING FOR SHRIMP OFF WEST COAST:

Since December 1963, the Fisheries Development Corporation of South Africa, in cooperation with the trawling industry, has carried out experimental fishing for shrimp off the Cape west coast and on the Agulhas Bank. The vessel used is the 67-foot stern trawler Keurbooms, owned by a South African fishery firm.

A 75-foot shrimp trawl was imported specially for this operation; a 100-foot trawl was ordered; and a 15-foot reversible beam trawl has also been tested.

Early results indicate that night fishing has produced the best catches of shrimp. Three species have been taken in the nets, and while initial catches have been small, the results are reported to be encouraging. (The South African Shipping News and Fishing Industry Review, May 1964.)

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ANCHOVY RESOURCES OFF COAST EXPLORED:

Because of the need to vary the South African fishing effort and thus reduce the dangerous dependence on a few species, a carefully planned experiment in anchovy fishing was initiated late last year by the Fisheries Development Corporation in association with the Division of Sea Fisheries and the fish meal industry. Six special purse-seine nets were imported and were supplied to six vessels provided by the industry.

Fishing started in October and early November 1963 and the work was coordinated by a Corporation technologist.

Until the end of December the following vessels fished the shoals of anchovy (Engraulis japonicus):

Between Lambert's Bay and Dassen Island-Groenveld II and Leerdam; between Dassen Island and Cape Hangklip--Kruger and Brand; from Cape Hangklip east--Vleigans and Seegans. All of them are large modern pilchard vessels in the charge of experienced skippers. They used (in conjunction with power blocks) knotless nets of synthetic fiber each about 200 fathoms long and 25 fathoms deep with a half-inch mesh (stretched).

Numerous technical problems were encountered, and it was only in December that fish were taken in any quantity. The total catch in that test period was 1,050 short tons, made up of 410 tons of anchovy, 465 tons of pilchards, 132 tons of round herring, and 45 tons of maasbanker. Four-fifths of the anchovy were caught in December and nine-

South Africa Republic (Contd.):

tenths of the 410-ton catch were obtained off the coast of the Cape Peninsula between about Llandudno and Cape Point. The remaining one-tenth was obtained mainly in the area between Saldanha Bay and Lambert's Bay. The length of the anchovy was between 3 and 5-1/2 inches with an average of 4 inches.

At the start of the seven-months' Cape pilchard season in January the six vessels resumed normal fishing for their factories. Five of the nets were distributed to factories along the coast to be used whenever possible. The sixth net was taken by the 61-foot vessel Karin, which was made available to the Corporation. The vessel was prepared for anchovy fishing. Again, technical problems disrupted fishing and by the end of March the tests, while they revealed the presence of anchovy, had yet to show whether the fish could be caught in quantities sufficient to support an industry.

Then one of the fishing firms which had one of the anchovy nets made some modifications to it. Reports from other factories had mentioned the difficulty of retrieving the deep net once it had been cast. The company had also heard from fishermen that anchovy could be seen near the surface. This gave them the idea that the special net might be too deep and it was, therefore, adjusted to about 20 fathoms.

Carrying this net with an unbraided nylon rope as a purse line, one of the firm's skippers sailed at about 11 a.m. on April 9 in the 67-foot pilchard vessel Silver Bonita. After 80 minutes' sailing north of the factory, anchovy shoals were seen on the echo-recorder. The first cast was successfully brought in with 60 tons of anchovy of a very small size.

On April 10 the Silver Bonita set out at 10 a.m. and proceeded north for two hours before the echo-recorder revealed fish. The first cast yielded 60 tons of anchovy at about 12 noon. A second cast at about 5 p.m. gave 100 tons. The fish were slightly larger than those caught the previous day.

On April 12 the boat left the factory in the evening and found fish in about the same position as before. This was the first attempt at night fishing and, although the vessel returned early next morning with 120 tons of anchovy, five casts had to be made.

On April 13 the vessel set out at 11 a.m. and returned at 6 p.m., because of bad weather, with 70 tons of anchovy taken in one cast.

By the third week of April the Silver Bonita had taken just over 800 tons. All her catches were satisfactorily processed in the firm's fish meal plant. Oil yield was high and the meal, slightly darker than that obtained from pilchards, was of good quality.

While the Silver Bonita was taking her catches, other boats had joined in the search. This was necessarily limited in scope because of the small number of anchovy nets available. One of those was used by the 70-foot vessel Groenveld II, fishing for a canning company. In three days this large vessel caught 300 tons of anchovy. By the third week in April she had brought in 540 tons.

Operating for still another firm, the Renosterkop brought in 390 tons. The Kruger and the Brand, operating for a Hout Bay firm, caught about 350 tons.

In less than three weeks in April, therefore, more than 2,000 tons of anchovy were caught.

Encouraged by this success and its implications, the Corporation and the industry have decided to move into the second stage of the experiment. It was agreed last year that, if the signs were favorable, fishing would be extended by the purchase of more nets. These are now being ordered and the first was to arrive in June 1964.

Twenty-three more nets are to be bought at a cost of about R8,000 (US$11,100) each, and, with the Karin, 29 vessels were expected to be engaged in anchovy fishing within the next 3 or 4 months.

According to the general manager of the Corporation, the vessels will be allowed by the Director of Sea Fisheries to continue fishing after the close of the pilchard season at the end of July. This will be an industry venture controlled and coordinated by the Corporation. (The South African Shipping News and Fishing Industry, May 1964.)

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FISH MEAL PRODUCTION FOR 1964 SOLD OR COMMITTED:

Prospects for South African fish meal appear very good, according to the Chairman of the South African Fish Meal Producers' Association. He made this statement when he visited Walvis Bay the last week of March 1964 with a 13-man Japanese delegation on a world tour.

About 75 percent of the total South African fish meal production (which includes South-West Africa) had been sold. The balance, for which the industry was already committed, would be sold later in the year.

The estimated South and South-West African production this year is about 300,000 short tons. The main markets for South African fish meal continue to be the United Kingdom, the Continent, the United States, and Japan.

Japan, he said, had signed a contract for 30,000 tons this season, the first shipment of which was scheduled in April 1964.

Speaking about the Japanese delegation, he said that its members represented the main feed buyers in their country.

"As a result of the talks we have had with the delegation," he said, "it is quite possible that Japan will purchase substantially more fish meal in 1965. . . ." (The South African Shipping News and Fishing Industry Review, May 1, 1964.)

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SPINY LOBSTER FISHING REGULATIONS AMENDED:

The regulations for fishing spiny lobster in South African waters were amended on March 13, 1964, under Section 11 of the Sea Fisheries Act of 1940, as follows:

"No person shall land or bring ashore any Cape rock lobster or any part of any Cape

South Africa Republic (Contd.):

rock lobster at any point along the coast of the Cape Peninsula in the area between, as northern limit, a white concrete beacon marked TBN1 situated near the mouth of the Second Salt River (also known as Diep River) and, as southern limit, a similar beacon marked H1 situated near 'Die Josie' at the southern extremity of Hout Bay:

"Provided that this regulation shall not apply to the landing or bringing ashore of Cape rock lobster at the fishing harbour, Table Bay Docks, as defined in Government Notice No. R290 of March 2, 1962 (regulations for the Harbours of the Republic of South Africa and South West Africa), or at the main landing quay at Hout Bay fishing harbour."

Police stations along the coast were notified of the new regulation and fishermen operating from Three Anchor Bay, a favorite landing place for spiny lobsters, were warned that they will be prosecuted if they continue to do so.

The new regulation was described as the latest blow to rock lobster poachers. Apart from that measure, no lobsters may be caught in the permanent sanctuary between Hout Bay and Salt River, which extends 12 miles seaward--the recently defined limit of South Africa's sea-fishing zone.

During the closed season (September 1 to October 31) there is a total ban on lobster fishing along the coast and at all times there is a limit to the size and condition of lobsters that may be caught.

According to the Director of Sea Fisheries, the sanctuary is most important from the point of view of conservation, situated as it is at the southernmost region of the total distribution of the species along the West Coast. He said: "It plays an extremely important role in restocking other areas along the West Coast. . . ."

The new regulation seemed to stop the fishermen for a few days, but they were quick to see a loophole in the law. It was reported that men, manning boats equipped with outboard motors, which are not allowed in Table Bay Harbour and for which the distance to Hout Bay is too great, were transferring their lobsters to "mother" craft while still at sea and receiving cash on the spot. This, however, may be a technical infringement of the new rule.

The following are some of the main regulations governing the catching of spiny lobster in Cape waters:

1. The body must be at least $3\frac{1}{2}$ inches measured down the upper side of the shell from between the eyes to the rear end of the shell.

2. No one shall sell, expose for sale, purchase, possess, or be in possession of any spiny lobster tail which has been severed from the body, if the second segment of the tail from where it joined the body is less than 15/16th of an inch long when measured from edge to edge down the middle line of the upper side of the tail.

3. It is illegal to catch, sell, expose for sale, purchase, or be in possession of female spiny lobster in berry (carrying eggs) or which show signs of having been stripped of the berry; or any spiny lobster which is about to or which has recently cast its shell or is "soft."

4. Spiny lobster must be landed whole and if inadvertently caught undersized, "soft," or in berry, shall be returned immediately to the sea.

5. The return of spiny lobster offal, or of any part of a spiny lobster to the sea, is prohibited except in a part of Table Bay to the northwest of a line drawn from the end of the breakwater to the beacon opposite Rietvlei; and the part of the territorial waters bounded by the coastline from York Point (or the Puntjie) to the mouth of Hourt Bay River, and by a straight line drawn from the Hout Bay River mouth to York Point.

6. No one may, for commercial purposes, catch spiny lobster by diving or swimming underwater and no skipper or boat owner engaged in catching spiny lobster may carry or allow to be carried diving equipment of any description.

7. Any spiny lobster found on a boat carrying such equipment shall be deemed to have been caught by divers--until the contrary is proved.

Diving for spiny lobster not for commercial purposes is permissible subject to the following conditions:

South Africa Republic (Contd.):

(a) For his own use, a diver may not take more than five spiny lobster a day--a permit not being necessary.

(b) A diver who wishes to collect spiny lobster on behalf of others for their own use must apply to the Director of Sea Fisheries for a permit, which will be for a quantity not exceeding 15 a day.

(c) No spiny lobster undersized, in berry, or "soft" may be taken and no diving may be done in any sanctuary or during the closed season.

(d) The spiny lobster caught may not be sold or offered for sale.

(e) A diver without a permit found with more than five spiny lobster, or one with a permit found with more than the authorized quantity shown on the permit, will be deemed to have contravened the law.

There are 5 spiny lobster sanctuaries off the Cape coast--Hout Bay, Table Bay, Robben Island, Saldanha, and St. Helena. The regulations listed apply only in the Cape and not in Natal, where diving for fish is controlled by the Natal Provincial Administration.

The penalty for a conviction under the Sea Fisheries Act is a fine not exceeding 200 Rand (about US$279) or jail for a period not exceeding a year, or both. A further fine equivalent to the assessed monetary gain in consequence of the offense may be imposed. Fishing gear may be confiscated and in the case of a second or further conviction the boat used in committing the offense may be confiscated and the license cancelled. (The South African Shipping News and Fishing Industry Review, April 1964.)

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QUALITY SPECIFICATIONS FOR FISHERY PRODUCTS:

The South African Bureau of Standards has been requested to prepare a specification for the oyster industry in South Africa. Although cultivation of oysters is one of the lesser known activities of the South African fishing industry, that industry envisions some measure of growth and development and is preparing to produce a quality product under the requirements of the Bureau of Standards.

The scope of the specification for oysters is expected to deal with good "farming" of the product, hygienic handling, treatment, size and weight grading, packaging, storage, and transportation. An important public safeguard will be the requirements dealing with pollution and contamination of the oyster beds as well as the oysters themselves. This will include the treatment necessary, and the exercise of control to protect the consumer by inspection and microbiological examination.

Quick frozen fishery products sold in South Africa are produced to the requirements of a standard specification of the South African Bureau of Standards. The emphasis is on hygiene--in the plant, the production line, employee working conditions, and for the employees themselves. Quality requirements for the raw product are strict and the characteristics that indicate absolute freshness are clearly defined in the specifications. (The South African Shipping News and Fishing Industry Review, March 1964.)

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NEW VESSEL EQUIPPED FOR DRUM-TRAWL FISHING:

In May 1964, the new stern-trawler Scotia joined the Port Nolloth fleet of a South African fishing company. The 75-foot vessel does not have a stern ramp. It was designed, instead, to use the drum-trawl method of fishing which is widely practiced in the Pacific Northwest area of the United States. On the Scotia, a large drum has been fitted just over the stern between the legs of the gantry on the upper deck. The drum acts as a reel for the trawl net which is simply wound on to the drum or wound off for shooting. The cod end is lifted to the head of the gantry and then carried across by a derrick until it is over the fish storage hold. The trawl drum on the Scotia is cable-driven from the main trawl winch. The drum will be modified for hydraulic operation if it proves successful off South Africa. Drum trawling leaves a clear working deck at all times and the wheelhouse of the new vessel has been placed forward so there is ample working deck space.

Built in Durban, South Africa, the Scotia is equipped with a 3-cylinder, 2-stroke Diesel engine driving a single controllable-pitch propeller. During trials, top speed was 9½ knots. The vessel has a fuel capacity of 12 tons of Diesel oil and an operating range of 2,340 miles when traveling at a cruising speed of 6½

South Africa Republic (Contd.):

knots. It has a hold capacity of 30 tons of fish and an equal quantity of ice. The hold is completely insulated with polyurethane foam.

Although intended primarily for bottom trawling, the Scotia was designed as a multi-purpose vessel and will also be used for spiny lobster fishing and for tuna long-lining. The vessel carries radar, radiotelephone, and echo-sounding equipment.

As the Scotia prepared to enter service in the spring of 1964, a sistership, the Dunscore, was nearing completion in a Durban shipyard. The design of both trawlers was planned with the aid of technicians who had observed European and United States fishing methods. (The South African Shipping News and Fishing Industry Review, May 1964.)

South and South-West Africa

FISHERY LANDINGS SET ANOTHER RECORD IN 1963:

The fishing industry of South and South-West Africa had its third million ton year in 1963, and for the sixth year in succession total landings set a new record. The fishing fleet of 1,000 powered boats and some 3,000 dinghies, operating from Durban to north of Walvis Bay, caught 1,248,230 short tons of pilchards, massabanker, mackerel, hake and other trawl fish, snoek and other line fish, and spiny lobster. It was the third year in a row that landings were over one million tons, nearly 100,000 tons above the record landings in 1962.

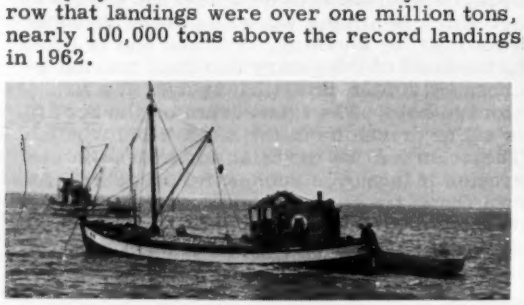


Fig. 1 - A 51-foot Walvis Bay, South-West Africa, vessel with a full catch of pilchards.

Since 1958, the South and South-West African fishing industry has enjoyed an unbroken succession of record landings. In 1958, total landings were 724,000 tons; in 1959--824,000; 1960--956,000; 1961--1,113,000; and in 1962--1,154,226 tons.

The new record in landings was achieved despite a drop in the Cape landings of pelagic shoal fish and a further slight decline in landings of trawl fish. But the difference was more than made up by a very large increase in the pilchard quota allowed the 6 factories at Walvis Bay.

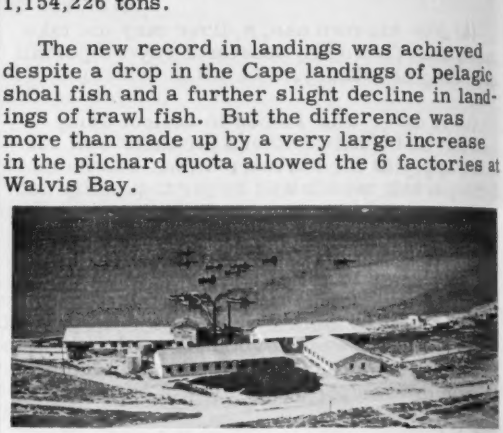


Fig. 2 - A pilchard-maasbanker cannery and reduction plant on the St. Helena Bay coast.

In the seven-months pilchard fishing season from January to the end of July, Cape fishing boats caught 441,943 short tons. In the same period in 1962, pilchard landings totaled 452,735 tons.

During the seven months, Cape boats also fished for maasbanker and mackerel. They were permitted another short season for those fish in November and December which brought the totals to 26,400 tons of maasbanker and 14,824 tons of mackerel, both well below the 1962 landings. The total pelagic shoal fish landings for the Cape in 1963 eventually reached 483,167 tons as compared with 550,233 tons in 1962 and 545,081 tons in 1961.

Fig. 3 - Part of the Cape Town fleet engaged in the South African spiny lobster fishery.

South and South-West Africa (Contd.):

In Walvis Bay the pilchard quota was raised again, this time from 435,000 tons in 1962 to 540,000 tons and later to 600,000 tons. The final landings of 602,639 tons compared with 435,068 tons in 1962 and with 377,281 tons in 1961. Added to the figure for Cape shoal fish, this increased catch at Walvis Bay raised the total for shoal fish in South and South-West Africa from 986,301 tons in 1962 to 1,085,806 tons in 1963.

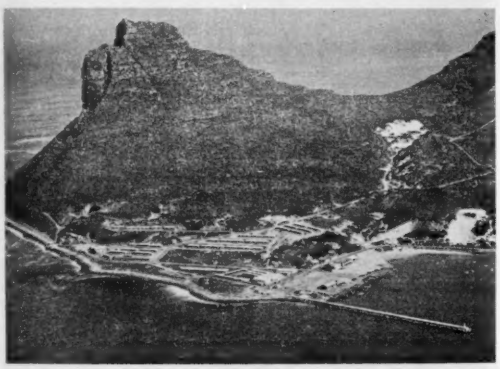


Fig. 4 - A spiny lobster plant at Hout Bay, near Cape Town, which processes and exports frozen spiny lobster tails to the United States.

With a seventh factory scheduled to go into operation at Walvis Bay in mid-1964 and a new fish meal factory going up at Luderitz, the permitted limit for South-West African pilchards has been raised to 720,000 tons in 1964. If the Cape catch fulfills its early promise, the increase in South-West Africa may combine with it to set a further new record for shoal fish in 1964.

For the South African trawling industry, 1963 was an average year with the total landings slightly below those of 1962. According to the Division of Sea Fisheries, those landings totaled 224.9 million pounds valued at US$7.2 million. In 1962, landings by the South African trawling industry were 117,925 tons.

Fig. 5 - A large otter trawler at Cape Town, typical of the fleet that fishes for stockfish.

No statistics are kept by the South African Government of spiny lobsters caught for local sale or of line fish landed at the numerous harbors, large and small, along the South African coast. The Division of Sea Fisheries estimates, however, that the Cape spiny lobster catch was about 9,000 tons and the Cape and Natal line fish catch was about 30,000 tons.

In South-West Africa a catch of 6,500 tons of spiny lobster was estimated, together with 3,000 tons of white fish and 1,500 tons of snoek. (The South African Shipping News and Fishing Industry Review, March 1964.)

Republic of Togo

EXTENDS TERRITORIAL WATERS TO 12 MILES:

A law regulating commercial fishing in the Republic of Togo, also extends Togolese territorial waters to a limit of 12 nautical miles (measured from extreme low tide). The law was passed on July 2, 1964, by the Togolese National Assembly. The law regulates commercial fishing in Togo's inland waters as well as ocean waters, and reserves fishing in territorial waters to Togolese citizens with no provision made for exceptions or licenses.

Fishing within the 12-mile limit is prohibited to foreign vessels, and the law provides severe penalties for violations, including confinement for up to 5 years and possible seizure of vessels and catch. The conditions of the law do not affect the free circulation of foreign fishing vessels navigating or anchoring in Togolese territorial waters. (United States Embassy, Lome, July 14, 1964.)

U.S.S.R.

NEW VARIETY OF STURGEON DEVELOPED:

A new variety of sturgeon which does not leave for the sea after spawning has been developed by Soviet scientists. One of the

U.S.S.R. (Contd.):

U.S.S.R. scientists believes that in 10 to 15 years time it will be possible to keep large sturgeon shoals in any reservoir. This is considered an important development in view of the construction of powerful hydroelectric stations on the Soviet Union's biggest rivers.

At a conference held in Moscow to discuss theoretical problems of fisheries, in addition to the problems connected with the acclimatization of sturgeon varieties, emphasis was laid on problems of artificial reproduction of fish. (The Fishing News, March 26, 1964.)

United Arab Republic

FISHERY PRODUCTS IMPORTS AND EXPORTS, JANUARY-JUNE 1963:

Fishery products imports by the United Arab Republic (UAR) in the first half of 1963 (January-June) were 2,858 metric tons valued at ŁE382,858 (US$880,600). Canned and preserved fishery products (including anchovies and herring) accounted for about 85 percent of the total imports and about 90 percent of the value.

UAR fishery products exports in the same period of 1963 totaled 1,229 tons valued at ŁE535,010 ($1,231,000). Fresh and frozen shrimp was the principal export item for a total of 898 tons valued at ŁE479,873 ($1,104,000). Of that total, 684,000 pounds (310 metric tons) was exported to the United States market at a time when shrimp prices had risen substantially from those of a year earlier. On a per-pound basis, the average export price of shrimp in the UAR during that period was 56 U. S. cents a pound as compared with an average of 41 cents in 1962.

In 1962 (January-December) the UAR exported 1,545 tons of shrimp valued at ŁE607,598 ($1,397,475). United States shrimp imports from that country during 1962 amounted to 1,783,000 pounds, or 809 metric tons. (United States Embassy, Cairo, April 1, 1964.)

Note: See Commercial Fisheries Review, December 1963 p. 80.

United Kingdom

NEWEST ADDITION TO FREEZER-TRAWLER FLEET LAUNCHED:

A new British freezer stern trawler, the Cape Kennedy, was launched at a Selby shipyard in England on June 12, 1964. It is the second trawler of that type to join the trawling fleet of a large British fishing company.

Fig. 1 - Launching of British freezer stern trawler Cape Kennedy at Selby, England, June 12, 1964.

The Cape Kennedy is driven by a Diesel-electric power system, has an identical hull formation, and is of the same size (226 feet 6 inches long overall) as the stern trawler Ross Valiant built by the same shipyard and launched in January 1964.

Fig. 2 - Freezer stern trawler Cape Kennedy, sistership to Ross Valiant, after launching.

United Kingdom (Contd.)

The vessel is to be built to Lloyds standards (*100 A.1.) for a single screw stern trawler. She has a bar keel and a well raked radius stem above the load waterline with cutaway forefoot for working in ice. There are two continuous decks--the upper one being the weatherdeck, and the lower the freeboard deck. Space between the decks provides accommodation for a crew of 28 and space for factory work. Space beneath the lower deck is for ballast, Diesel oil, fish livers, freshwater tanks, and chain lockers.

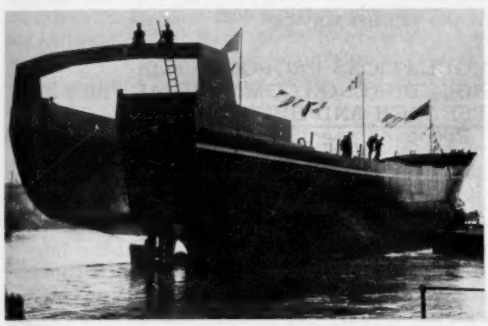


Fig. 3 - Stern view of Cape Kennedy showing stern ramp.

A prominent feature of the vessel is the wheelhouse topped by the navigating bridge. On the port side is the chartroom and the completely equipped wireless room is on the starboard side. Two tall gallows span the vessel to carry and work the fishing gear; one some 20 feet behind the wheelhouse boatdeck carries the trawl warps from the winch; the other is positioned across the end of the stern ramp to lift the cod end on to the fishdeck.

A cold-storage room of 22,000 cubic feet is insulated and can be refrigerated to a temperature of -20° F., and accommodate up to 400 tons of 100-pound fish blocks. The fish blocks are produced by a battery of 10 vertical plate freezers which have a maximum potential daily (24 hours) output of nearly 35 tons.

The new vessel is expected to enter service early in 1965. The machinery specification is similar to that of Ross Valiant except for the Diesel-electric propulsion machinery which consists of three 8-cylinder 925 b.hp. 700 r.p.m. turbo-charged marine propulsion engines each coupled to generators in tandem--and the trawl winch, which is of a different type.

The owners say that fish from the Cape Kennedy will help to meet the increasing demand for fish sold under their same unchanged price contract as fish produced by the Ross Valiant, which has helped to keep fish prices steady the year-round.

Note: See Commercial Fisheries Review, April 1964 p. 76.

PORTION OF UNITED STATES SHRIMP FLEET MIGRATES TO CENTRAL AND SOUTH AMERICA

During 1963, a portion of the United States Gulf and South Atlantic shrimp fleet migrated to Central and South American countries. Several of the larger shrimp firms set up companies in Latin American countries and moved a part or all of their fleets to those countries. The development pointed to the increasing trend for fishing fleets to become international in operation.

The possibilities of shrimp fishing off Central and South America were first made known by the U. S. Fish and Wildlife Service exploratory work in 1941-43. Subsequent work in recent years by vessels of the U. S. Bureau of Commercial Fisheries Exploratory and Gear Research Station at Pascagoula, Miss., corroborated the earlier findings. Fishing by vessels engaged in the fishery is now centered between Trinidad and the mouth of the Amazon River.

"Fisheries of the United States 1963"
C. F. S. No. 3500
U. S. Bureau of Commercial Fisheries
Washington, D. C.

Department of Commerce

BUREAU OF THE CENSUS

TIME EXTENDED FOR COMMENTS ON CHANGES IN EXPORT CLASSIFICATION:

An extension of 15 days, from July 31 to August 15, 1964, was announced by the U. S. Bureau of the Census for receiving comments and recommendations on Public Bulletin B-8, "Proposed Changes in Schedule B--Statistical Classification of Domestic and Foreign Commodities Exported from the United States."

The time was extended following a meeting of spokesmen for business and trade organizations with officials of the Bureau of the Budget and the Census Bureau, and was in recognition of the fact that the mailing of the Bulletin had been unavoidably delayed.

The Bureau of the Census in an announcement on June 12, 1964, invited comments on the proposed classification which will enable it to issue monthly and annual reports in terms of the Standard International Trade Classification (SITC), in order that United States exports may be compared with data of other trading nations. Statistics on product classes based on the U. S. Standard Industrial Classification (SIC) will be reported annually, to permit comparisons with domestic production.

Details of the proposed revision are contained in Public Bulletin B-8, which has been sent to about 35,000 manufacturing and exporting firms.

Census officials pointed out that if some or most of the recommendations were submitted in advance of the deadline of August 15, 1964, it would expedite their proper consideration and the preparation of the new reporting system, to be effective in January 1965.

Department of the Interior

FISH AND WILDLIFE SERVICE

REGULATIONS PROPOSED FOR PROCEDURES ON COMMERCIAL FISHERIES RESEARCH AND DEVELOPMENT ACT:

Proposed regulations setting up procedures to be used by the Secretary of the Interior in giving financial aid to state agencies for research and development of the commercial fisheries resources of the Nation were announced by the U. S. Department of the Interior on July 8, 1964. The Notice of Proposed Rule Making was published in the Federal Register of July 10, 1964. The proposed regulations are to be issued under 50 CFR Part 253, pursuant to the authority granted the Secretary of the Interior by section 8 of the Commercial Fisheries Research and Development Act of 1964 (Public Law 88-309).

The new law, passed by Congress this year and signed by President Johnson May 20, 1964, provides for payment of $5 million annually to States for commercial fishery research and development over a five-year period. The States will be required to provide matching funds equal to at least 25 percent of project costs.

The Act also authorizes the allocation of $400,000 annually for two years and $650,000 for each of the following three years to States where there is a commercial fishery failure resulting from natural or undetermined causes.

A third provision of the law authorizes the allocation of $100,000 a year to States for developing new commercial fisheries.

A fourth provision provides for loan funds to Alaska's fishermen for charter of fishing vessels for temporary replacement pending the repair or permanent replacement of ves-

sels lost or damaged in the March 27, 1964, Alaska earthquake disaster. Repayment of those loans is to be made only from the net profits of the operation of the chartered vessels after deducting a reasonable amount for the salary of the fishermen chartering the vessels. (Regulations covering this provision of the act were published in the May 23, 1964, Federal Register.)

Interested persons were given until August 9, 1964, to submit written comments, suggestions, or objections on the proposed regulations to the Director, Bureau of Commercial Fisheries, Department of the Interior, Washington, D. C. But written comments, suggestions, or objections to Section 253.4 of 50 CFR Part 253 dealing with "Use of resource disaster funds" had to be submitted by July 20, 1964.

The proposed regulations as published cover definitions, interpretation of the authorization, use of research and development funds, use of resource disaster funds, use of new commercial fishery funds, financial responsibility, reporting, record retention, audit and inspection, patents and inventions, etc.

The proposed regulations as published in the Federal Register of July 10, 1964, follow:

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[50 CFR Part 253]

COMMERCIAL FISHERIES RESEARCH AND DEVELOPMENT

Notice of Proposed Rule Making

Notice is hereby given that pursuant to the authority vested in the Secretary of the Interior by section 8 of the Commercial Fisheries Research and Development Act of 1964 (Public Law 88-309), it is proposed to adopt 50 CFR part 253 as set forth below. The purpose of these regulations is to provide for procedures to be used by the Secretary in providing financial assistance to State Agencies for research and development of the Commercial fisheries resources of the Nation and, in cooperation with State Agencies, directly to the commercial fisheries in cases where he has determined that there is a commercial fishery failure due to a resource disaster arising from natural or undetermined causes.

This proposed regulation relates to matters which are exempt from the rule making requirements of the Administrative Procedures Act (5 U.S.C. 1003); however, it is the policy of the Department of the Interior that, whenever practicable, the rule making requirements be observed voluntarily. Accordingly, interested persons may submit in triplicate written comments, suggestions, or objections with respect to the proposed amendments to the Director, Bureau of Commercial Fisheries, Department of the Interior, Washington, D.C., 20240, within 30 days of the date of publication of this notice in the FEDERAL REGISTER, except that comments with respect to section 253.4 must be submitted within 10 days.

Sec.
253.1 Definitions.
253.2 Interpretation of the authorization.
253.3 Use of research and development funds.
253.4 Use of resource disaster funds.
253.5 Use of new commercial fishery funds.
253.6 Financial responsibility.
253.7 Reporting.
253.8 Record retention.
253.9 Audit and inspection.
253.10 Officials not to benefit.
253.11 Patents and inventions.
253.12 Convict labor.

AUTHORITY: The provisions of this part 253 issued under sec. 8, Public Law 88-309.

§ 253.1 Definitions.

As used in this part, terms shall have the meanings ascribed in this section.

(a) *Secretary.* The Secretary of the Interior or his authorized representative.

(b) *Act.* Public Law 88-309.

(c) *Research and development funds.* Funds, the appropriation of which, were authorized by subsection 4(a) of the Act.

(d) *Resource disaster funds.* Funds, the appropriation of which, were authorized by subsection 4(b) of the Act.

(e) *New commercial fishery funds.* Funds, the appropriation of which, were authorized by subsection 4(c) of the Act.

(f) *Person.* Individual, association, partnership or corporation, any one or all as the context requires.

(g) *Primary producer.* A person owning or having a beneficial interest in and managing a vessel or gear engaged in harvesting raw fish.

(h) *Net profits.* The net profit, before taxes, as computed in accordance with generally accepted accounting standards with due regard to the practices in the locality in which the fishing operation is conducted.

(i) *Reasonable amount as determined by the Secretary for the salary of the fisherman.* A computed amount equal to the average income of the applicant from fishing operations during the 3 preceding calendar years, with a maximum of $3,000, computed from applicant's income tax returns for those years.

(j) *Contractor.* A person, agency or institution performing services, under contract with the State Agency, in carrying out the provisions of a project agreement.

§ 253.2 Interpretation of the authorization.

The terms used in the Act to describe the authorization to the Secretary are construed to be limited to the meanings ascribed in this section.

(a) Supplement, and, to the extent practicable, increase the amounts of State funds. The words "supplement, and, to the extent practicable, increase the amounts of State funds" mean that State funds, to be used for at least 25 percent of the cost of a project financed with research and development funds,

will be additional funds provided for that project and will not represent funds diverted from some other fishery project except that during fiscal years 1965 and 1966, the fact that a State Legislature did not meet after approval of this Act will be considered evidence that it is not practicable for the State Agency to furnish funds that have not been previously used for other fishery projects.

(b) Resource disaster arising from natural or undetermined causes. The words "resource disaster arising from natural or undetermined causes" mean a serious disruption of the harvesting of raw fish, caused by inability to catch the raw fish, or inability to sell the catch, because of a natural or undetermined cause. It does not include inability to sell the catch because of competition from imported or other competitive products.

(c) Developing a new commercial fishery. The words "developing a new commercial fishery" mean the development of a fishery for species of fish not common to the commercial fishery in the State in which the development is anticipated, or on stocks of fish not then being utilized commercially.

(d) Manufactured or processed fishery merchandise. The words "manufactured or processed fishery merchandise" mean fishery products which are included in the tables entitled Manufactured Fishery Products appearing in the annual Bureau of Commercial Fisheries Statistical Digests, Fishery Statistics of the United States. Data on new products, or the collection of statistics on products not formerly covered in these tabulations, will only be included in the subsequent year's determination of the apportionments.

§ 253.3 Use of research and development funds.

(a) *Apportionment and obligation.* On July 1 of each year, or as soon thereafter as practicable, the Secretary shall certify to the respective State agencies and the Secretary of the Treasury the amount of the respective apportionments of funds appropriated pursuant to section 4(a) of the Act. The Governor of each State shall notify the Secretary which agency of the State government is the agency authorized under its laws to regulate commercial fisheries and a duly authorized official of the State shall certify as to the duly appointed official authorized in accordance with State law to commit the State to participation under the provision of the Act, to sign project documents, and to receive payments. The Secretary shall be advised promptly of any change made in such authorizations. No funds may be obligated until aforesaid certification has been received. Proposed projects may be submitted at any time after the apportionment is made, but must be submitted at least 120 days prior to the end of the fiscal year following the year in which the apportionment to be charged was made. Notice of obligation of the funds will be furnished the applicable State agency as soon as possible after approval of the project by the Secretary.

(b) *Preliminary project statement.* A preliminary project statement shall be submitted for each proposed project which shall contain such fundamental information as the Secretary may require, in order to determine if the project should be approved. The preliminary project statement shall include plans, specifications, duration, experimental design, personnel and cost estimates, as well as the source of funding.

(c) *Project agreement.* After the Secretary shall have approved a preliminary project statement, mutual obligations to be undertaken by the cooperating agencies shall be evidenced by a project agreement to be executed between the State agency and the Secretary for each such project.

(d) *Prosecution of work.* (1) The State Agency shall carry all approved projects through to a stage of completion acceptable to the Secretary with reasonable promptness. Failure to complete the project to the satisfaction of the Secretary shall be cause for the Secretary to withhold further payments until the project is satisfactorily completed. Projects may be terminated upon determination by the Secretary that satisfactory progress has not been maintained. The Secretary shall have the right to inspect and review work being done at any time.

(2) All construction work will be performed by contract awarded to the lowest responsible bidder as the result of free and open competitive bidding.

(3) Research work shall be continuously coordinated by the State Agency with other studies conducted by the State and other agencies in order to avoid unnecessary duplication.

(4) All work shall be performed in accordance with applicable State laws, except when contradictory to Federal laws or regulations, in which case Federal law or regulations will prevail.

(e) *Economy and efficiency.* No project shall be approved until the State has shown to the satisfaction of the Secretary that appropriate and adequate means shall be employed to achieve economy and efficiency in the completion of the project.

(f) *Contracts.* Supply, service, equipment and construction contracts involving an expenditure of $2,500 or more entered into by a State Agency for the execution of approved project activities shall be based upon free and open competitive bids. If a contract is awarded to other than the lowest responsible bidder, the payment of the Federal portion of the cost of the project shall be based on the lowest responsible bid, unless it is satisfactorily shown that it was advantageous to the project to accept a higher bid. Upon request, the State Agency shall certify and promptly furnish to the Secretary a copy of each contract executed and copies of all bids received concerning the contract.

(g) *Form of vouchers.* Vouchers on forms provided by the Secretary and certified as therein prescribed, showing amounts expended on each project and the Federal portion claimed to be due on account thereof shall be submitted to the Secretary by the State Agency either after completion of each project or as the work progresses.

(h) *Safety and accident prevention.* In the performance of each project, the State shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation. The State shall be responsible that all safeguards, safety devices, and protective equipment are provided and will take other needed actions reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of work on the project.

(i) *Personnel.* The State agency or the contractor shall maintain an adequate and competent force of employees to initiate and carry approved projects through to satisfactory completion. Personnel employed on approved projects by the State Agency shall be selected on the basis of their competence to perform the services required and shall conduct their duties in a manner acceptable to the Secretary.

(j) *Nondiscrimination.* Each project agreement shall contain the applicable sections of Executive Order No. 10925, dated March 6, 1961, as amended, pertaining to nondiscrimination and shall also be subject to Public Law 88–352 and any regulations promulgated thereunder.

§ 253.4 Use of resource disaster funds.

(a) *Determination.* The Secretary shall cause to be published in the FEDERAL REGISTER a notice of finding that a commercial fishery failure due to a resource disaster arising from natural or undetermined causes when such a finding is made. After such publication, resource disaster funds may be used for the following purposes with the cooperation of the respective State Agencies:

(1) Payments causing the removal from the usual markets of stocks of fish or shellfish of the species listed in the said finding which are preventing normal trade operations. No payments will be made under this paragraph unless the Secretary deems such action necessary to aid in restoring normal trade operations; the person receiving such payment, if not the primary producer, provides evidence that he has paid the primary producer, or such other person from whom the raw fish was purchased, the entire purchase price of the fish; the person receiving such payments has furnished the Secretary with such information regarding purchases, costs, sales, etc., as the Secretary may require; and satisfactory evidence of removal of the products from channels of distribution, including storage, shall be provided to the Secretary. No payments may be made for any product which was removed from storage or other channels of distribution prior to the approval of this Act.

(2) Payments to primary producers of the species of fish listed in the said finding to assist them in obtaining gear or equipment necessary to operate in the same or a different fishery than that affected by the said resource disaster. No payments will be made under this paragraph unless the Secretary deems such action necessary to aid in restoring primary producers adversely affected by the said commercial fishery failure to a condition where they can operate profitably; the person receiving such payments furnishes the Secretary with such information regarding catches, sales and costs as the Secretary may require; and the person receiving such payments agrees to operate the gear purchased with the assistance of such payment in a manner satisfactory to the Secretary.

(3) Short-term loans for operating expenses of primary producers. When

loans are made under this paragraph, the interest rate shall be 3 percent and repayment will be required only from net profits of the fishing operation, which net profit shall be reduced by such reasonable amount as determined by the Secretary for the salary of the fisherman. No such loans will be made unless the Secretary deems such action necessary to aid in restoring primary producers adversely affected by the said commercial fishery failure to a condition that will permit them to resume operations; the funds are not otherwise available on reasonable terms; and the past earning and credit record of the applicant is such that it provides reasonable assurance of repayment.

(4) Payments to State Agencies for projects directly related to the restoration of the fishery affected by the said resource disaster or to prevent a similar failure of the fishery in the future. Such preliminary project proposals and their processing will be subject to all regulations relating thereto in this Part, except that these projects will be given preference over other proposed projects with reference to the use of funds obtained under subsection 4(b) of the Act, and Federal funds may be used for 100 percent of the cost of the project if all of the funds are obtained from appropriations authorized under subsection 4(b) of the Act.

(b) *Non-determination.* At any time when there is no finding of a commercial fishery failure as described in subsection (a) of this section, the Secretary may, if he deems such action to be in furtherance of the purposes of the Act, approved preliminary project proposals for funding under subsection 4(b) of the Act from funds carried over from previous fiscal years; provided however, that no preliminary project proposal from any State will be funded under this subsection until that State has had all of its available apportioned funds, if any, obtained from appropriations authorized under subsection 4(a) of the Act, obligated.

§ 253.5 Use of new commercial fishery funds.

Preliminary project proposals leading to the establishment of a new commercial fishery may be approved for funding under this section when the Secretary finds that the proposal, if approved and carried out, will reasonably assure the establishment of a new commercial fishery within the State submitting the proposal. All proposals under this section will be subject to all applicable regulations of this Part, except that 100 percent of the project costs may be paid from Federal funds and, if the Secretary deems that the proposal will further the purposes of the Act, these proposals may be approved without the requirement that the State submitting the proposal first have obligated all of its apportioned funds, if any.

§ 253.6 Financial responsibility.

(a) State Agencies are required to account for each approved project. Cost accounting records, consistent with generally accepted accounting standards, shall be maintained for each project separately.

(b) State Agencies are responsible for the financial management of the project. Appropriate internal controls will, therefore, be adopted and installed to insure that the project is accomplished in the most efficient and economical manner.

§ 253.7 Reporting.

(a) Quarterly progress reports on approved projects will be furnished by State Agencies. These reports will be compiled on forms approved by the Secretary. Progress payments or other disbursements will not be made unless reporting requirements are met.

(b) Completion reports, on forms approved by the Secretary, are required when the project is completed pursuant to the project agreement. Final progress payments to State Agencies on individual projects will not be made until a completion report has been rendered and accepted by the Secretary. Completion reports with respect to research and development projects will contain a certification that the State Agency has contributed at least 25 percent of the total project cost.

(c) A mutual release will be executed by the State Agency and the Secretary, or his authorized representative, when both parties have fulfilled their respective obligations under the agreement or contract.

(d) Copies of audit reports on audits of projects made by State auditors or inspectors shall be furnished the Secretary and will not be returned to State Agencies.

§ 253.8 Record retention.

(a) All records of accounts, reporting and supporting documentation thereto will be retained by the State or State Agency for a period of 3 years after the project is completed.

(b) Loan applicants, to whom a loan has been granted pursuant to section 9 of Public Law 88-309 or § 253.4(a)(3), shall retain all records incident to the fishing operation for a period of 3 years after the Note has been satisfied.

§ 253.9 Audit and inspection.

(a) Authorized representatives of the United States Government and the United States General Accounting Office shall have the right to audit, examine or inspect accounts, books, documents and other pertinent records involving operations and transactions under these regulations.

(b) State Agencies are expected to provide for a system of periodic internal review or audit by State employees.

(c) Periodic audits will be performed on projects with State Agencies and other operations provided for in Public Law 88-309 by authorized representatives of the United States Government. Audits may be performed on active projects and within 3 years after the project is completed.

(d) Audit exceptions involving adjustments in payment to any State Agency on any project, whether active or completed, may be applied to other approved projects or to applicable apportionments of funds to State Agencies.

§ 253.10 Officials not to benefit.

No member of or delegate to Congress or resident commissioner, shall be admitted to any share or any part of an agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

§ 253.11 Patents and inventions.

It is understood and agreed that inventions or discoveries of processes, devices and methods of application conceived and developed as a result of a contract and all rights therein shall be the property of the Government. In furtherance of a contract, the State Agency shall agree to assign unto the Government any and all rights, title and interest which it may have or claim to have in any patentable invention or discoveries of processes, devices and methods of application arising out of activities under this contract. The State Agency shall further agree that all its employees who shall perform work under a contract shall assign any patent rights which they may have or claim to have in discoveries or inventions resulting from work therefrom unto the Government. With respect to any subcontract, the State Agency's obligation under this section will be discharged upon its including in such subcontract a patent rights article not less favorable to the Government than as provided herein.

§ 253.12 Convict labor.

In connection with the performance of work, the State Agency agrees not to employ any person undergoing sentence of imprisonment at hard labor.

Secretary of the Interior.
STEWART L. UDALL,

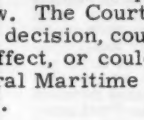
Note: See Commercial Fisheries Review, August 1964 p. 95.

United States Court of Appeals

FEDERAL MARITIME COMMISSION ORDER FOR LOWER ALASKA WATER TRANSPORTATION RATES STAYED:

The United States Court of Appeals for the Ninth Circuit, San Francisco, Calif., on June 1, 1964, stayed the May 13, 1964, order of the Federal Maritime Commission to the Alaska Steamship Company requiring it to reduce tariffs to the extent that the rates do not produce a rate of return exceeding 10 percent. Those rates affect canned salmon traffic southbound from Alaska and cannery supplies northbound to Alaska. The Court's injunction will remain in effect until a final decision is made by the Court on the merits of the Alaska Steamship Company's petition for a review. The Court could uphold the Commission's decision, could allow the tariffs to remain in effect, or could remand the matter to the Federal Maritime Commission for further review.

Eighty-Eighth Congress (Second Session)



Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

INTERIM ADJOURNMENT: On August 20, 1964, the House adopted H. Con. Res. 359, to provide that when the House adjourns on August 21, it will stand adjourned until August 31. The Senate concurred in H. Con. Res. 359, to provide that when the House and Senate adjourn on August 21, they will stand adjourned until August 31.

ALASKA OMNIBUS ACT AMENDMENT: On July 21, 1964, the House passed H. R. 11438, to amend the Alaska Omnibus Act to provide assistance to Alaska for reconstruction of areas damaged by the earthquake of March 1964 and subsequent seismic waves. On the same day, the House considered S. 2881 (passed by the Senate on June 30). The House amended S. 2881 by striking out all after the enacting clause and inserted the provisions of H. R. 11438 as passed, and H. R. 11438 was laid on the table. S. 2881 as amended was sent to the Senate.

On July 24, 1964, the Presiding Officer laid before the Senate the amendment of the House of Representatives to S. 2881, which was to strike out all after the enacting clause and insert: "That this Act may be cited as the '1964 Amendments to the Alaska Omnibus Act'." Senate disagreed to House amendment, asked for conference with the House, and appointed conferees.

On July 28, the House insisted on its amendment to S. 2881, disagreed to by the Senate. The House agreed to a conference and appointed conferees. On July 28, House and Senate conferees met in executive session to resolve the differences between the Senate- and House-passed versions of S. 2881. Conferees reached agreement in principle and instructed the staff to draft language embodying the principles as agreed upon.

On August 4, 1964, conferees, in executive session agreed to file a conference report on the differences between the Senate- and House-passed versions of S. 2881, providing assistance to Alaska for reconstruction of damage from the recent earthquake.

On August 6, 1964, Congressman Aspinall submitted to the House the conference report (H. Rept. 1710) on S. 2881.

On August 7, 1964, the House by a voice vote adopted the conference report on S. 2881, and sent the legislation to the Senate. The Senate on August 8, 1964, adopted the conference report on S. 2881, and cleared the bill for the President.

On August 19, 1964, the President signed into law S. 2881 (P. L. 88-451). Authorizes a little over $50 million for highway repair and reconstruction, the restoration of certain public facilities, urban renewal, harbor reconstruction, and housing and financial programs. This is in addition to S. 2772 (P. L. 88-311) which authorized $23.5 million in transitional grants to Alaska; and H. J. Res. 976 (P. L. 88-296) which appropriated $50 million to provide emergency financial assistance to areas determined by the President to have suffered major natural disasters (principally intended for Alaska's earthquake damage).

ANADROMOUS FISH CONSERVATION: Anadromous Fish (Hearings before the Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, House of Representatives, 88th Congress, 2nd Session), Serial No. 88-22, 109 pp., printed. Contains hearings held May 26 and 27, 1964, on H. R. 2392, H. R. 3195, H. R. 3314, H. R. 3697, H. R. 3779, H. R. 3995, H. R. 4225, H. R. 6856, H. R. 11150, and H. R. 11398, to authorize the Secretary of the Interior to initiate a program for the conservation, development, and enhancement of the Nation's anadromous fish in cooperation with the several states. Included are contents of the bills; reports from various Federal agencies; statements of Congressmen, and Federal, state, association, and industry officials. Purpose is to carry out a positive and comprehensive program of conserving and developing the Nation's anadromous fishery resources that are subject to depletion from Federal, state, and private water-resource developments and for other causes, or, with respect to which this country has international commitments.

On August 4, 1964, the House Committee on Merchant Marine and Fisheries ordered favorably reported (H. Rept. 1768) H. R. 2392, authorizing the Secretary of the Interior to initiate a program for the conservation, development, and enhancement of the nation's anadromous fish in cooperation with the several states. The bill also authorizes the Federal Government to cooperate

with state agencies in conducting research; in constructing, installing, and maintaining fish passage devices and spawning conditions for anadromous fish; operating fish hatcheries, etc. The bill applies to species of anadromous fish--those such as salmon which spawn in fresh water but live much of their lives in the sea--on all coasts of the United States. H. R. 2392 was amended extensively. Section 4 was amended to limit the authorization for appropriations to $25 million over a five-year period and no state could receive more than 20 percent of the total funds. Section 5 now requires a 50 percent cost-sharing ratio between the Federal and state governments. A new section 7 provides that pollution of estuarine areas will be reported immediately to proper authorities for appropriate action. The Senate Committee on Commerce as of early August 1964 had not conducted hearings on this proposal.

On August 17, 1964, the House was scheduled to take up H. R. 2392. Unfortunately, lack of time prevented its consideration at that time. The bill will again be scheduled after the recess. In the Congressional Record (p. 20046) of August 20, Congressman Keith, in an extension of his remarks, supported H. R. 2392, pointing out to his colleagues the necessity of its consideration as soon as possible. Would enable the Secretary of the Interior, in cooperation with the states, to improve the conservation and development of anadromous fish resources.

CHEMICAL PESTICIDES COORDINATION: On July 24, 1964, Senator Ribicoff announced that the Subcommittee on Reorganization and International Organization of the Senate Committee on Government Operations was to resume its hearings on the role of Government in pesticide use, regulation, and research. Senator Ribicoff in the Senate made some remarks on the "workings of the various Government agencies responsible for pesticide regulation and research" (Congressional Record, July 24, 1964, p. 16331).

Testimony presented during a two-day hearing in Washington, D. C., on July 28-29 led Senator Ribicoff to point to endrin as a "long-distance killer that silently makes its way" down the Mississippi to cause massive fish kills in Louisiana. His comment came as officials of the Velsicol Chemical Corporation appeared before the Subcommittee on Reorganization and International Organizations of the Senate Committee on Government Operations to contest Public Health Service claims that the chlorinated hydrocarbon pesticide is the probable fish-killer. There was also further testimony on the fish kill in the Mississippi River.

COMMERCIAL FISHERIES RESOURCES SURVEY: On August 4, 1964, the Senate Committee on Commerce, in executive session, ordered favorably reported with amendments S. J. Res. 174, authorizing the Bureau of Commercial Fisheries to conduct a survey of the marine and fresh-water commercial fishery resources of the United States, its territories and possessions.

On August 18, 1964, the Senate Committee on Commerce favorably reported (S. Rept. 1469) with amendments S. J. Res. 174.

On August 19, 1964, the Senate passed, amended, S. J. Res. 174. Bill was cleared for House action.

EXPORT CONTROL OF FISHERY PRODUCTS: Introduced in the House on July 27, 1964, H. R. 12071 (Pelly), H. R. 12073 (Stinson), and H. R. 12074 (Tollefson), to control the exportation from the United States, its territories and possessions of fish and fishery products; referred to the Committee on Merchant Marine and Fisheries.

On August 5, 1964, Congressman Pelly spoke in the House inserting in that day's Congressional Record an editorial from the July 24 issue of the Seattle Post Intelligence concerning the invitation of the Governor of Alaska to the Japanese fishing industry to buy salmon in Prince William Sound.

On August 15, 1964, Congressman Pelly under an extension of remarks, inserted in the Congressional Record (pp. A4340-4341) a resolution by the Maritime Trades Department, Puget Sound district, to the Maritime Trades Department, AFL-CIO, meeting in Chicago, July 30 and 31, concerning the Governor of Alaska's action in inviting the Japanese fishing industry to buy part of the Alaska salmon catch.

FISHERMEN'S ORGANIZATION AND COLLECTIVE BARGAINING: On July 23, 1964 (Magnuson--for himself and Senator Bartlett) introduced in the Senate S. 3026, a bill to provide that for a two-year period certain fishermen's organizations regardless of their technical legal status, shall have a voice in the ex-vessel sale of fish or other aquatic products on which the livelihood of their members depends; referred to the Committee on Commerce. Senator Magnuson, in his remarks in the Senate stated that S. 3026 is similar to S. 1135, a bill which he introduced in the 1st session of the 88th Congress, and which had the purpose of establishing a sound economic relationship between fishermen, fish dealers, and canners, except that S. 3026 would provide for a two-year trial basis. (Congressional Record, p. 16125.)

FISH PRICES IN ALASKA: On July 22, 1964, Congressman Pelly spoke in the House on the dispute over the price of fish in Prince William Sound area, Alaska (Congressional Record, July 22, 1964, p. 15957).

FISH PROTEIN CONCENTRATE: On August 10, 1964, Senator Bartlett spoke in the Senate concerning the hearings to be held on August 14 by the Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Commerce on fish protein concentrate. In his remarks Senator Bartlett mentioned that the Bureau of Commercial Fisheries has been conducting experiments aimed at the development of a high-grade fish protein concentrate which would be inexpensively produced. (Congressional Record, p. 18255.)

The Merchant Marine and Fisheries Subcommittee of the Senate Committee on Commerce on August 14, 1964, held hearings on the potential of fish protein concentrate to the United States fisheries industry. Testimony was received from the Director of the U. S. Bureau of Commercial Fisheries and from a representative of the National Academy of Sciences Scientific Advisory Committee on Marine Protein Concentrate. The hearings were recessed subject to call.

On August 15, 1964, Senator Douglas spoke in the Senate inserting in that day's Congressional Record (p. 19116) an article from that morning's issue of the New York Times concerning fish protein concentrate.

FISHING INDUSTRY PROBLEMS: On July 23, 1964, Senator Pell spoke in the Senate and inserted in that day's Congressional Record (p. 16130) an article which appeared in a journal entitled Maritimes, published by the Oceanography Department of the University of

Rhode Island. The article ("An Antiquated and Fragmented U. S. Fishing Industry Faces Many Problems") gives an appraisal of the problems of the fishing industry.

FOOD MARKETING NATIONAL COMMISSION: On July 31, 1964, Senator Hart inserted in the Congressional Record (p. 16928) a magazine editorial on the newly formed National Commission on Food Marketing.

FOREIGN VESSELS' PROCESSING OF FISHERY PRODUCTS IN U. S. TERRITORIAL WATERS BANNED: On August 6, 1964, H. R. 12275 (Pelly) was introduced in the House, referred to the Committee on Merchant Marine and Fisheries; and S. 3086 (Magnuson, for himself and Senator Jackson) was introduced in the Senate, referred to the Committee on Commerce; bills to amend the Act prohibiting fishing in the territorial waters of the United States by vessels other than vessels of the United States in order to expand the definition of the term "fisheries," to ban freezing, packing, or other processing within the territorial waters of the United States by foreign commercial fishermen or vessels. Each of the sponsors of the bills made remarks upon introducing them (Congressional Record, August 6, 1964, pp. 17747, 17761).

Introduced in the House August 11, 1964, H. R. 12316 (Tollefson), similar to H. R. 12275.

INDIAN FISHING RIGHTS: On August 5-6, 1964, the Subcommittee on Indian Affairs of the Senate Committee on Interior and Insular Affairs conducted hearings on problems relating to Indian fishing on the West Coast, particularly the State of Washington. Under consideration were: S. J. Res. 170, which would authorize the states to regulate off-reservation fishing by Indians; and S. J. Res. 171, which would authorize the purchase and extinguishment of Indian treaty fishing rights. The problem revolves around Indian fishing rights. Several Indian treaties, adopted more than 100 years ago, gave Indians the right to take fish at all usual and accustomed places. As a result, some Indians believe their treaty rights are not subject to regulation by the states and they use manners and methods illegal for other citizens to take fish. Conflicting court actions have resulted. The committee received testimony from officials of the Oregon Fish Commission, Columbia River Salmon & Tuna Packers Association, Astoria, Oreg., and numerous witnesses representing the following Indian tribes: Yakima, Makah, Puyallup, Quinault, Tulalip, and Warm Springs, as well as the Assistant Secretary of the Interior and the Commissioner of Fish and Wildlife.

MEDICAL CARE FOR VESSEL OWNERS: On July 28, 1964, the House by a vote of 202 yeas to 170 nays passed H. R. 3973, to permit certain owners of fishing boats to receive medical care and hospitalization without charge at hospitals of the Public Health Service. This passage was subsequently vacated and S. 978 (passed by Senate May 28, 1963), a similar bill, was passed in lieu after being amended to contain the House-approved text. H. Res. 799, the open rule under which the legislation was considered, had been adopted earlier by a voice vote.

On July 31, 1964, the Senate concurred in House amendment to S. 978, clearing the bill for the President.

On August 13, 1964, the President signed into law S. 978 (P. L. 88-424).

NAVIGABLE WATERS OBSTRUCTION MARKING: introduced in the Senate on July 9, 1964, S. 2991 (Magnuson), to clarify the responsibility for marking of obstructions in navigable waters. Recommended by the Secretary of the Treasury, the bill would eliminate dual responsibilities by the Department of the Army and the Coast Guard for marking of wrecks. It would vest sole responsibility for marking wrecks in the Coast Guard. Referred to the Senate Committee on Commerce. Also introduced in the House on July 21, 1964, H. R. 11964 (Bonner), identical to S. 2991; referred to the Committee on Merchant Marine and Fisheries.

OCEANOGRAPHIC COUNCIL: Introduced in the Senate on July 9, 1964, S. 2990 (Magnuson), to establish in the Executive Office of the President, the National Oceanographic Council. It would be composed of the Vice-President (Chairman); Secretaries of Treasury, Defense, Interior, Commerce, and Health, Education, and Welfare; director of the Office of Science and Technology; chairman of the Atomic Energy Commission; and director of the National Science Foundation. The Council would survey all oceanographic and marine science activities and develop a comprehensive program, resolving any differences. A civilian staff would be authorized. Up to $500,000 a year would be authorized for the program. Referred to the Senate Committee on Commerce.

On August 18, 1964, Congressman Garmatz, under an extension of remarks, inserted in the Congressional Record (p. A4386) the remarks of the Chief Counsel of the House Committee on Merchant Marine and Fisheries before the Governor's conference on the National Oceanographic Program, Annapolis, Md., Aug. 13, 1964.

OCEANOGRAPHIC RESEARCH PROGRAM: National Oceanographic Program--1965 (Hearings before the Subcommittee on Oceanography of the Committee on Merchant Marine and Fisheries, House of Representatives, 88th Congress, 2nd Session), Serial No. 88-23, 722 pp., printed. Contains hearings held on June 23, 24, 25, and 30, 1964, to examine the national oceanographic program for fiscal year 1965; presents statements given by various Federal government officials, and information supplied by various officials and agencies.

Speaking from the floor of the Senate on August 14, 1964, Senator Beall discussed the purpose of the First Annual Governors' Conference on the National Oceanographic Program which was held at the U. S. Naval Academy, Annapolis, Md., August 13, 1964. The program and summation of the conference were inserted in the Congressional Record, pages 18922-18923.

OCEANOGRAPHIC RESEARCH VESSELS: On July 28, 1964, the Senate Committee on Commerce, in executive session, ordered favorably reported, S. 2552, a bill to exempt oceanographic research vessels from the applications of certain vessel inspection laws (amended). An amendment by the Committee would broaden the definition of oceanographic research vessels to include all vessels operated for oceanographic research in the public interest as determined by the Secretary of the Treasury.

On July 31, 1964, S. 2552, was reported to the Senate, with amendment, by the Senate Committee on Commerce (S. Rept. 1276). The Senate passed the bill, with amendment, on August 1, 1964.

The House on August 3, 1964, referred to its Committee on Merchant Marine and Fisheries S. 2552.

PACIFIC ISLAND TRUST TERRITORY DEVELOPMENT: On July 29, 1964, the Senate Committee on Interior and Insular Affairs favorably reported (H. Rept. 605) with amendment H. R. 3198, to promote the economic and social development of the Trust Territory of the Pacific Islands. The Senate Committee entirely deleted Section 2 of the bill. This Section would have amended the Tariff Act of 1930 to permit the duty-free entry of Trust Territory goods into the U. S. Under that Section, fishery products would have been eligible for duty-free entry only if the fish were landed from U. S. or Trust Territory-flag vessels, manned by crews two-thirds of which are nationals of the United States, . . . or citizens of the Trust Territory. Section 2 was included in the bill when it was passed by the House on August 5, 1963. The amendment by the Senate Committee means that the Trust Territory would retain its current status as a "foreign area" for the purposes of the Tariff Act. H. R. 3198 passed by the House on August 5, 1963.

On July 31, 1964, the Senate passed with amendments H. R. 3198. The Senate deleted from the bill a section which would have extended to the Trust Territory of the Pacific Islands the benefits of Section 301 of the Tariff Act of 1930, providing that articles may be admitted free of duty into the United States from areas under its flag or administration where the articles "do not contain foreign materials to the value of more than 50 percent of their total value." The bill was sent to the House.

On August 12, 1964, H. R. 3198, was cleared for the President by House concurrence in Senate amendments thereto.

PASSAMAQUODDY TIDAL POWER PROJECT: On August 12, 1964, the Subcommittee on Flood Control--Rivers and Harbors--of the Senate Committee on Public Works held hearings on S. 2573, authorizing the International Passamaquoddy Tidal Power Project, including hydroelectric power development of the Upper St. John River, with testimony from the Secretary of the Interior and the Secretary of the Army. The hearings were adjourned subject to call.

STATE DEPARTMENT APPROPRIATIONS FY 1965: On August 17, 1964, the House and Senate adopted the conference report (H. Rept. 1817) on H. R. 11134, making appropriations for the Department of State for FY 1965, clearing the legislation for the President. Included in the compromise bill is $2,025,000 for International Fisheries Commissions, an increase of $25,000 over the House-passed bill, but $75,000 less than the amount recommended by the Senate. The 1965 appropriation is $25,000 more than the amount appropriated for FY 1964, but $114,000 less than the amount requested in the Department's FY 1965 budget estimate. H. R. 11134 passed by House May 6, 1964, and passed by Senate, amended, August 13, 1964.

TRADE EXPANSION ACT: Introduced in the House on July 27, 1964, H. R. 12068 (Johansen); July 28, H. R. 12081 (Betts); July 28, H. R. 12081 (Reid) and H. R. 12200 (Clausen); and August 7, 1964, H. R. 12286 (Barrett), to amend the Trade Expansion Act of 1962; all referred to the Committee on Ways and Means.

VESSEL CONSTRUCTION SUBSIDY AMENDMENT: On July 28, 1964, H. Res. 805, to provide for consideration of and 2 hours of debate on S. 1006 (to provide for the correction of inequities in the construction of fishing vessels) was reported favorably to the House (H. Rept. 1614). The Committee on Rules previously granted an open rule, with two hours of debate, on S. 1006.

On August 14, 1964, by a record vote of 198 yeas to 124 nays, the House passed with amendments S. 1006.

On August 15, 1964, Congressman Gill under an extension of remarks stated his support of S. 1006. (Congressional Record, p. A4340.)

On August 18, 1964, the Senate agreed to the House amendments to S. 1006, clearing the bill for the President.

VESSEL ENGAGED IN FISHERIES: H. R. 6007, to permit the vessel SC-1473 to engage in the fisheries, was reported favorably to the Senate by the Committee on Commerce, without amendment (S. Rept. 1266), on July 29, 1964.

S. Rept. 1266, Permitting the Vessel SC-1473 to Engage in the Fisheries (July 29, 1964, report from the Committee on Commerce, United States Senate, 88th Congress, 2nd Session, to accompany H. R. 6007), 5 pp., printed. The Committee recommended passage (without amendment) of H. R. 6007, to permit the vessel SC-1473 to engage in the fisheries and the foreign and coastwise trade of the United States. Contains the purpose of and need for the bill, and departmental reports.

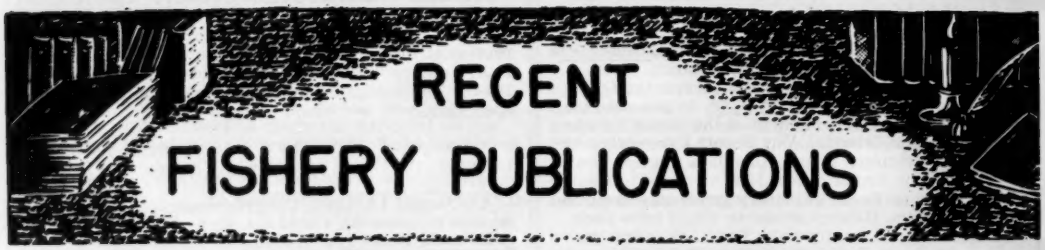
The Senate on July 31, 1964, passed and cleared for the President, without amendment, H. R. 6007. It was signed by the President on August 13, 1964 (P. L. 88-282).

Introduced in the House on August 4, 1964, H. R. 12248 (Gibbons), to permit the vessel Janice Vee to be documented for use in the fisheries and coastwise trade; referred to the Committee on Merchant Marine and Fisheries.

WATER POLLUTION CONTROL AMENDMENT: On August 5-6, 1964, the Committee on Public Works met in executive session to consider S. 649, to amend the Federal Water Pollution Control Act. The Committee continued executive consideration of the measure on August 6. The Committee adjourned on August 6, subject to call of the chair.

WATER RESOURCES COUNCIL: Introduced in the Senate July 28, 1964, S. 3039 (Jackson), to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources through the establishment of a Water Resources Council and river basin commissions, and provide financial assistance to the states in order to increase state participation in such planning; referred to the Committee on Interior and Insular Affairs.

On August 20, 1964, the Subcommittee on Irrigation and Reclamation of the House Committee on Interior and Insular Affairs met in executive session and ordered favorably reported to the full committee S. 1111.



FISH AND WILDLIFE SERVICE PUBLICATIONS

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CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
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SSR.- FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number — Title

CFS-3505 - Fish Sticks and Fish Portions, January-March 1964, 2 pp.
CFS-3507 - Frozen Fishery Products, April 1964, 8 pp.
CFS-3517 - Fish Meal and Oil, 1963 Annual Summary, 4 pp.
CFS-3521 - Fish Meal and Oil, April 1964, 2 pp.
CFS-3525 - Wisconsin Landings, March 1964, 2 pp.
CFS-3526 - California Landings, March 1964, 4 pp.
CFS-3527 - New Jersey Landings, March 1964, 3 pp.
CFS-3528 - Virginia Landings, March 1964, 3 pp.
CFS-3529 - New Jersey Landings, April 1964, 3 pp.
CFS-3530 - Michigan Landings, March 1964, 3 pp.
CFS-3531 - New York Landings, April 1964, 4 pp.
CFS-3532 - Manufactured Fishery Products, 1962 Annual Summary, 8 pp.
CFS-3533 - California Landings, April 1964, 4 pp.
CFS-3535 - North Carolina Landings, May 1964, 4 pp.

Wholesale Dealers in Fishery Products, 1963 (Revised):
SL- 1 - Maine, 8 pp.
SL- 2 - New Hampshire, 1 p.
SL- 3 - Massachusetts, 11 pp.
SL- 5 - Connecticut, 1 p.
SL- 9 - Delaware, 1 p.
SL-10 - Maryland, 9 pp.
SL-11 - Washington, D. C., 1 p.
SL-12 - Virginia, 11 pp.
SL-14 - South Carolina, 3 pp.
SL-15 - Georgia, 2 pp.
SL-41 - Arkansas (Mississippi River and Tributaries), 2 pp.
SL-42 - Kentucky (Mississippi River and Tributaries), 1 p.
SL-43 - Alabama (Mississippi River and Tributaries), 1 p.
SL-44 - Nebraska (Mississippi River and Tributaries), 1 p.
SL-45 - Mississippi (Mississippi River and Tributaries), 1 p.
SL-48 - Indiana (Mississippi River and Tributaries), 1 p.
SL-49 - South Dakota (Mississippi River and Tributaries), 1 p.

Sep. No. 707 - The Guinean Trawling Survey.
Sep. No. 708 - Changes in Abundance of the Marine Worm, Glycera dibranchiata, Associated with Seawater Temperature Fluctuations.

FL-558 - Index of Publications by the Branch of Technology, Bureau of Commercial Fisheries, 1955-59 inclusive, by F. Bruce Sanford and Helen E. Plastino, 33 pp., April 1964. Includes publications of Branch of Technology and its personnel, both Government and privately published.

SSR-Fish. No. 454 - Fur Seal Investigations, Pribilof Islands, Alaska, 1962, by Alton Y. Roppel and others, 107 pp., illus., December 1963.

SSR-Fish. No. 466 - Ecology of the Gulf of Mexico Commercial Sponges and its Relation to the Fishery, by John F. Storr, 79 pp., illus., March 1964. Discusses commercial sponges, reproduction, growth, cultivation, distribution, ecological relationships, and disease. Information on the present status of the sponge industry, commercial sponge production, and the structure of the ocean bottom in sponging areas is also included.

America Goes Fishing, Conservation Note 14, 7 pp., illus., April 1964.

Annual Report of the Commissioner, Fish and Wildlife Service, to the Secretary of the Interior, 1963, 72 pp., illus., printed, 1964. (Reprinted from the 1963 Annual Report of the Secretary of the Interior for the Fiscal Year ended June 30, 1963, pp. 281-348.) Summarizes the various activites of the Service. Describes the Bureau of Commercial Fisheries research and development programs, participation in international oceanographic studies, developments in foreign fisheries and trade, services to industry, Columbia River development program, educational activities, fur-seal operations, commissioning of the Albatross IV, and construction of an oceanographic laboratory at La Jolla, Calif. Also covers activities of the Bureau of Sport Fisheries and Wildlife, including the management of wildlife and sport fishery resources, wildlife and fishery research, and pesticides studies.

Commercial Fisheries of the Pacific Coast, Conservation Note 15, 8 pp., illus., April 1964. Describes the fisheries for salmon, pelagic fish, groundfish, and shellfish. Discusses "market fish" sold fresh on the Pacific Coast.

Extent of Acid Mine Pollution in the United States Affecting Fish and Wildlife, by Edward C. Kinney, Circular 191, 32 pp., illus., June 1964.

Fishery Research Biological Laboratory, Galveston, Fiscal Year 1963, Circular 183, 11 pp., illus., processed, 1964. Research at the Bureau of Commercial Fisheries Biological Laboratory in Galveston concerns shrimp, estuaries, and industrial bottomfish. It is conducted under four broad programs: (1) shrimp fishery (which includes four research contracts); (2) estuarine; (3) physiology and behavior; and (4) industrial fishery. Each of those programs is subdivided into projects. This report deals with progress in project research during fiscal year 1963. Since this is a progress report, the findings recorded are preliminary in nature.

Progress in Sport Fishery Research, 1963, Circular 178, 188 pp., illus., March 1964. Discusses the work during 1963 of the U.S. Bureau of Sport Fisheries and Wildlife disease laboratories, fish nutrition laboratories, California-Nevada sport fishery investigations, Arkansas Fish Farming Experimental Station, fish-pesticide laboratory, and marine laboratories; also reservoir investigations.

Some Chronic Effects of DDT on Cutthroat Trout, by Don Allison and others, Research Report 64, 30 pp., 1964.

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MNL-88 - Japan's Imports and Exports of Fisheries Products, 1961/1962, 62 pp.

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS AVAILABLE FOR REFERENCE ONLY FROM THE LIBRARY, U. S. DEPARTMENT OF THE INTERIOR, WASHINGTON, D. C. 20240.

Studies of the Redfish (SEBASTES MARINUS L.) from the Ecological and Fishery Research Standpoints. I--The Economic Importance of the Redfish; II--Determination of Age in the Redfish, by Adolf Kothaus, 11 pp., processed. (Translated from the German, Berichte der Deutschen Wissenschaftlichen Kommission fur Meeresforschung, vol. 12, no. 4, 1952.)

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Studies on the Race of GRYPHAEA GIGAS (Thunberg). 1--Local Variation in the Size of Prodissoconch, by Yataro Tanaka, Translation Series No. 8, 4 pp., illus., processed, May 1964. (Translated from the Japanese, The Venus, Japan Journal of Malacology, vol. 18, no. 2, November 1954.) A study of the size of an oyster found in Japan.

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THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Market News Monthly Summary, Part II - Fishing Information, May and June 1964, 12 and 8 pp. each, illus. (U.S. Bureau of Commercial Fisheries, Biological Laboratory, P.O. Box 6121, Pt. Loma Station, San Diego, Calif. 92100.) Contains sea-surface temperatures, fishing and research in-

formation of interest to the West Coast tuna-fishing industry and marine scientists; for the months indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, May 1964, 18 pp. (Market News Service, U.S. Fish and Wildlife Service, U.S. Customs House, 610 S. Canal St., Rm. 1014, Chicago, Ill. 60607.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, May 1964, 8 pp. (Market News Service, U.S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans, La. 70130.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; Gulf menhaden landings and production of meal, solubles, and oil; and sponge sales; for the month indicated.

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New York City's Wholesale Fishery Trade--Monthly Summary--April 1964, 18 pp. (Market News Service, U.S. Fish and Wildlife Service, 155 John St., New York, N.Y. 10038.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

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"An aid in the preparation of blood samples from fish," by S. F. Snieszko, article, Progressive Fish Culturist, vol. 25, no. 4, 1963, p. 174, printed.

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Relatorio e Contas do Banco de Angola, Exercicio de 1963 (Report and Accounts of the Bank of Angola, 1963 edition), 254 pp., printed in Portuguese. Impresso na Grafica Monumental, Limitada, Rua Neves Ferreira, 13,1°, Lisbon, Portugal. Includes chapters on fishery landings and products produced, export data, and details on exports of fish meal and other fishery products.

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--Milan A. Kravanja

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Managing Louisiana Fish Ponds, by Max W. Summers, 65 pp., illus., printed, 1963. Louisiana Wild Life and Fisheries Commission, Wild Life and Fisheries Bldg., 400 Royal St., New Orleans, La. 70130. Discusses choosing the proper location, constructing the pond, reconditioning old ponds, and management for fish production. Also covers manipulating fish populations, additional management problems and solutions, and fish for stocking.

"Survival of fish in deep water of farm ponds during the summer," by Otto W. Tiemeier, article, Transactions of the Kansas Academy of Science, vol. 65, no. 4, 1962, pp. 463-466, printed. Library of Kansas State University College of Agriculture and Applied Science, Lawrence, Kans.

FAROE ISLANDS:

Faroes in Figures, no. 26, June 1964, 6 pp., illus., printed. Føroya Fiskasøla, Torshavn, Faroe Islands. This issue contains an article, "The fishery of the Faroes in 1963," which discusses the decline in the total catch; catches off the Faroe Islands, Iceland, Greenland, and Newfoundland; landings of demersal species and herring; and disposition of the catch by salting, filleting, or drying. Also includes statistical tables on export and production of salt fish and export of dried cod.

FILMS:

Films on Oceanography (Catalog Series), Publication C-4, 29 pp., processed, December 1963, 25 cents. National Oceanographic Data Center, Washington, D. C. 20390. Contains brief reviews of 26 films and film strips dealing with some aspects of marine sciences. Each review includes running time, type of audience, and organization from which film is obtainable.

List of Films and Filmstrips on Fisheries and Related Subjects, 187 pp., processed, 1963. Fourth Edition. Technology Branch, Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. This list contains titles of films and filmstrips, together with producers, distributors, and prices (where given). It includes films in various languages and at least one produced as far back as 1936. A short description of the subject matter is included.

FISH ANOMALIES:

"A bibliography of anomalies of fishes," by C. E. Dawson, article, Gulf Research Reports, vol. 1, no. 6, April 1964, pp. 308-399, printed. Gulf Coast Research Laboratory, Ocean Springs, Miss. Deals with the literature on fish teratology (science of biological abnormalities) in respect to both particular anomalies and their previous recognition in a species.

FISH BEHAVIOR:

"Metodika eksperimental'nogo izucheniya a povedeniya ryb" (Methods of experimental studies of fish behavior), by L. G. Voronin and Yu. A. Kholodov, article, Referativnii Zhurnal-Biologiia, 1962, no. 1160, printed in Russian. Akademiia Nauk SSSR, Institut Nauchnoi-Informatsii, Moscow, U.S.S.R.

"The reaction of fish to moving backgrounds," by F. R. Harden Jones, article, The Journal of Experimental Biology, vol. 40, no. 3, 1963, pp. 437-446, printed. Cambridge University Press, 200 Euston Rd., London NW1, England.

"Sposobnost' nekotorykh ryb chernogo morya orientirovat'cya na istochnik zvuka" (The ability of some black sea fishes to orientate towards the source of a sound), by Yu. D. Podlipalin, article, Voprosy Ikhtiologii, vol. 2, no. 4, 1962, pp. 721-724, printed in Russian. Akademiia Nauk SSSR, Ikhtiologicheskaia Komissaia, Moscow, U.S.S.R.

FISH COOKERY:

Delicacies from Louisiana Waters, 11 pp., illus., printed. Louisiana Wild Life and Fisheries Commission, Wild Life and Fisheries Bldg., 400 Royal St., New Orleans, La. 70130. Describes, with zest, Louisiana's salt-water fish, oysters, shrimp, crawfish, crabs, and fresh-water fish. Red snapper and catfish are among the favorite finfish in that State.

FISH CULTURE:

"Ekologiya vyrashchivaniya ryby na zalivnykh risovykh polyakh" (Ecology of fish cultivation rearing in flooded rice fields), by V. A. Movchan, article, Biological Abstracts, vol. 43, no. 3, 1963, 8712, printed. Biological Abstracts, 3815 Walnut St., Philadelphia 4, Pa.

"Studies on the fish-culture food. 12--On the effect of dry liver powder upon the growth of carp yearlings. 13--On the effect of fish meal, made of marine products from northern Pacific Ocean, upon the growth of carp," by T. Terao, article, Suisan Fukajo Kenkyu Hokoku, vol. 17, December 1962, pp. 69-81, printed in Japanese. Hokkaido Fish Hatchery, Fisheries Agency, Nakanoshima, Outskirt of Sapporo, Hokkaido, Japan.

FISH DISEASES:

Disease in Marine Populations, by Carl J. Sindermann, 21 pp., illus., printed. (Reprinted from Transactions of the Twenty-Eighth North American Wildlife and Natural Resources Conference, March 4, 5 and 6, 1963, pp. 336-356). Wildlife Management Institute, Wire Bldg., Washington, D. C. 20005.

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FISH FINDING:

"Interrelationship between natural resources, marine research, and fishing operations. II," by Birger Rasmussen, article, Norwegian Fishing and Maritime News, vol. 10, no. 4, 1963, pp. 21, 23, printed. Norwegian Fishing and Maritime News, P.O. Box 740, Slottsgt 3, Bergen, Norway.

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"Sposoby obespecheniya zhivymi kormami molodi ryb na rybovodnykh zavodakh" (Methods of providing live food for young fish in fish hatcheries), by M. M. Briskina, article, Rybnoe Khoziaistvo, vol. 36, 1960, pp. 133-142, printed in Russian. Rybnoe Khoziastvo, V. Krasnosel'skaia 17, B-140, Moscow, U.S.S.R.

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An Air-Lift Pump for Elevating Salmon, Herring and Other Fish of Similar Size, by S. W. Roach, F. G. Claggett, and J.S.M. Harrison, Circular No. 29, 6 pp., illus., printed, 1963. Technological Research Laboratory, Fisheries Research Board of Canada, Vancouver 1, B. C., Canada.

"A practical method for cleaning and dressing fish," by A. W. Lantz, article, Trade News, vol. 16, no. 11, May 1964, pp. 6-8, illus., processed. Director of Information and Educational Service, Department of Fisheries, Ottawa, Canada. Lists in brief precise terms, the 11 steps in preparation of fish for cooking. For each step there is an explanatory photograph or diagram.

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Report on Investigations of Fish Kills in Lower Mississippi River, Atchafalaya River, and Gulf of Mexico, 82 pp., illus., processed, April 6, 1964. Division of Water Supply and Water Pollution Control, Public Health Service, U.S. Department of Health, Education, and Welfare, Washington, D. C. 20201.

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"Increased use of fish meal in South seen; layer, pet food use adds to consumption," article, Feedstuffs, vol. 36, January 25, 1964, pp. 63-64, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

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"The composition of the component fatty acids of several fish oils," by S. Ito and K. Fukuzumi, article, Yukagaku, vol. 12, no. 5, May 1963, pp. 278-281, printed in Japanese with English abstract. Japan Oil Chemists' Society, Department of Applied Chemistry, Faculty of Engineering, University of Tokyo, Motofujicho, Bunkyo-ku, Tokyo, Japan.

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"Primenenie variatsionnostatisticheskikh pokazatelei vissledovanii nekotorykh voprosov izmenchivosti v populyatsiyakh ryb" (Application of statistical indices of variation to the study of problems of variability of fish populations), by F. A. Turdakov, article, Biological Abstracts, vol. 43, no. 3, 1963, 8757, printed. Biological Abstracts, 3815 Walnut St., Philadelphia 4, Pa.

"O zakonomernostyakh rosta ryb i ikh znachenii v dinamike populyatsii" (Patterns of growth in fishes and their role in population dynamics), by N. I. Chugunova, article, Trudy Soveschchaniia Komissiia Akademiia Nauk SSSR, vol. 13, 1961, pp. 94-107, printed in Russian. Izdatel'stvo Akademiia Nauk SSSR., Podsosenskii per d. 21, Moscow B-64, U.S.S.R.

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"Fish flour," article, Report of the Fourth Inter-African Conference on Food and Nutrition, Douala, Cameroun, 4-13 September 1961, p. 13, printed, 1963. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

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"Studies on practical use of fish-pump. (1)," by H. Soeda, article, Sogo-Kaiyokagaku, vol. 5, March 1963, pp. 13-31, printed in Japanese. Muaruzen Co., Export Department, P.O. Box 605, Tokyo, Japan.

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"A method for making fish scale impressions in the field or laboratory," by Robert C. Courtright, article, Transactions of the American Fisheries Society, vol. 93, no. 2, 1964, pp. 200-201, printed. American Fisheries Society, 1404 New York Ave. NW., Washington, D. C. 20005.

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Tables of the Incomplete Beta Function for the Calculation of Fish Population Yield, by N. J. Wilimovsky and E. C. Wicklund, 291 pp., printed, 1963. Institute of Fisheries, University of British Columbia, Vancouver 8, B. C., Canada.

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FISHWAYS:

"Ob ispol'zovanii sudokhodhykh shlyuzov ges dyla propuska ryby iz nizhnego b'efa v vodokhranilishche" (Use of navigation locks at hydroelectric stations for the passage of fish from downstream into the reservoir), by Z. M. Kipper, article, Biological Abstracts, vol. 42, no. 6, 1963, 20619, printed, Biological Abstracts, 3815 Walnut St., Philadelphia 4, Pa.

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Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species, FAO Fisheries Reports No. 6, vol. 2, 975 pp., processed, 1963. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Program for Technical Assistance for developing the fisheries of many countries. These reports have been processd only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Report to the Government of Venezuela on the Development of the Marine Fisheries Research Program, by John G. Simpson, FAO Report No. 1606, 63 pp., illus., May 1963.

Report to the Government of Aden on the Crawfish Resources of Eastern Aden Protectorate, by R. W. George, FAO Report No. 1696, 26 pp., illus., June 1963.

First Report to the Government of Nigeria on Fishing Boats for Lake Chad, by Roland Andersson and Curt S. Ohlsson, FAO Report No. 1711, 62 pp., illus., 1963. Covers the work of a boatbuilder during 1963/64 and a preliminary survey team, assigned by the FAO to find the most suitable approach to the problem of boatbuilding for harvesting fish from Lake Chad. Largely composed of excellent black and white photos made during the survey.

(Guatemala) Informe al Gobierno de Guatemala sobre Recursos de Camarones (Report to the Government of Guatemala on Shrimp Resources), by Harold C. Loesch, FAO Report No. 1721, 9 pp.. processed in Spanish, 1963.

FRANCE:

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"Rapport moral sur l'activité du Comité Central des Pêches Maritimes pendant l'année 1963, presenté par J. S. Parquic, President du Comité Central des Pêches Maritimes" (Comprehensive report on the activities of the Comité Central des Peches Maritimes during the year 1963, presented by J. R. Parquic, President of the Committee), by J. S. Parquic, article, France Pêche, no. 84, May 1964, pp. 49-54, 57-58, 61-67, 69, 71-81, 85-87, 88, 91-92, illus., printed in French, single copy 2.50 F. (about 52 U.S. cents). France Pêche, Boîte Postale 179, Lorient, France.

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FREEZE-DRYING:

"Studies on the storage of dehydrated food by freeze-drying. 3--Changes of carotenoid and fat in freeze-dryed tomato, carrot, and oyster," by S. Kimura and K. Shioda, article, Nihon Shokuhin-kogyo Gakkai-shi, vol. 10, no. 5, May 1963, pp. 169-174, printed in Japanese. Japanese Society of Scientific Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

Sublimatsionnaia Sushka Pishchevikh Produktov (Freeze-Drying of Food Products), by A. K. Kaminarskaia, S.A. Livshits, and Y. A. Olenev, 52 pp.,

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illus., printed in Russian, 1963, 22 Kopecks (about 25 U.S. cents). Gosudarstvennoe Izdatel'stvo Torgovoi Literatury, Moscow, U.S.S.R. Discusses present status of the freeze-drying process; construction of the apparatus used; raw materials, quality control of products, research methods; and drying of meat and fish. Also covers in detail drying of fish preparations, storage of freeze-dried fish and fish preparations, and other related topics.

--Milan A. Kravanja

FRESH-WATER FISHERIES:

"Nekotorye voprosy theorii akklimatizatsii presnovodnykh ryb" (Some aspects of the theory of acclimatization of fresh-water fish), by E. V. Burmakin, article, Zoologicheski Zhurnal, vol. 40, no. 9, 1961, pp. 1385-1394, printed in Russian. Redaktsiia Zoologicheskogo Zhurnala, Podsosenskii per. d. 21, Moscow B-64, U.S.S.R.

"Osnovnye zadachi razvitiya ozernogo rybnogo khozyaistva v SSSR" (The development of the lake fishing industry in the U.S.S.R.), article Biological Abstracts, vol. 44, no. 2, 1963, 4907, printed. Biological Abstracts, 3815 Walnut St., Philadelphia 4, Pa.

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FROZEN FISH:

"Basic quality changes in frozen seafood," by W. J. Dyer, article, ASHRAE Journal, vol. 6, January 1964, pp. 77-78, printed. American Society of Heating, Refrigerating and Air-Conditioning Engineers, 62 Worth St., New York, N. Y. 10013.

"Individually frozen fish fillets," by W. R. Lang, article, Food Manufacture, vol. 38, December 1963, pp. 667-669, printed. Leonard Hill, Ltd., Stratford House, 9 Eden St., London NW1, England.

"Time-temperature tolerance of frozen seafood," by John A. Peters, article, ASHRAE Journal, vol. 6, January 1964, p. 77, printed. American Society of Heating, Refrigerating and Air-Conditioning Engineers, 62 Worth St., New York, N. Y. 10013.

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Die Bedeutung der Fishwirtschaft fur die Volkswirtschaft der Entwicklungsländer und deren Förderung durch die Bundesrepublik Deutschland (The Significance of the Fish industry in the Economies of Developing Nations and their Assistance from the Federal Republic of Germany), by Dr. Werner Becker, 30 pp., illus., printed in German. (Reprinted from Berichte über Landwirtschaft, vol. 42, 1964, pp. 119-148.) Verlag Paul Parey, Spitalerstrasse 12, 2000 Hamburg 1, Germany.

"A Cuxhaven second port de pêche allemand: 90% du poisson frais filete et un prix plancher" (At Cuxhaven, Germany's second fishing port: 90 percent of the fresh fish is filleted and a floor price), article, France Pêche, no. 84, May 1964, pp. 123-126, illus., printed in French, single copy 2,50 F. (about 52 U.S. cents). France Pêche, Boîte Postale 179, Lorient, France.

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Life History and Migratory Patterns of Arctic Grayling, Research Report No. 2, processed, 1963. Department of Fish and Game, Subport Bldg., Juneau, Alaska.

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Description of Great Slave Lake Commercial Fishing Vessels in 1963, by J. J. Keleher, Manuscript Reports of the Great Slave Lake Investigation No. 32, 39 pp., printed, 1964. Biological Station, Fisheries Research Board of Canada, London, Ont., Canada.

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Foreign Trade Regulations of Guatemala, by Rodney D. Anderson, OBR 64-50, 8 pp., printed, May 1964, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) The report discusses trade policy, import tariff system, sales and other internal taxes, documentation and fees, and labeling and marking requirements. Also covers special customs provisions, nontariff import controls, the country's export controls, United States foreign trade controls, and Government representation between the two countries.

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Regulation and Investigation of the Pacific Halibut Fishery in 1963, Report of the International Pacific Halibut Commission No. 34, 24 pp., illus., printed, 1964. International Pacific Halibut Commission, Fisheries

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Hall No. 2, University of Washington, Seattle 5, Wash. A report of the accomplishments of the Commission during 1963 including historical background, activities during the year, 1963 regulations, and statistics of the fishery. Also covers composition of the catches, tagging experiments, studies of halibut below commercial size, and trawl survey of demersal species off the southern coast of central and western Alaska.

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A Convenient Technique for Obtaining Pituitary Glands from Fish, by H. Tsuyuki, P. J. Schmidt, and M. Smith, Reprint No. 768, 3 pp., illus., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 21, no. 3, 1964, pp. 635-637.) Queen's Printer and Controller of Stationery, Ottawa, Canada.

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"Production drive in Hungary," article, Fishing News International, vol. 3, no. 2, April-June 1964, pp. 113-114, 116, illus., printed, single copy 6s. 6d. (about 90 U.S. cents). Arthur J. Heighway Publications, Ltd., Ludgate House, 110 Fleet St., London EC4, England.

ICHTHYOLOGY:

Copeia, no. 2, June 30, 1964, 212 pp., illus., printed. American Society of Ichthyologists and Herpetologists, 18111 Nordhoff St., Northridge, Calif. Includes, among others, articles on: "Mass spawning behavior of sockeye salmon in Brooks River, Alaska," by Wilbur L. Hartman, Theodore R. Merrell, Jr., and Richard Painter; "Carcharhinus floridanus, the silky shark, a synonym of C. falciformis," by J.A.F. Garrick, Richard H. Bachus, and Robert H. Gibbs, Jr.; "An experimental study of the effect of temperature on the incubation time, development, and growth of Pacific sardine embryos and larvae," by Reuben Lasker; "Instrumental conditioning of young sharks," by Timothy Wright and Robert Jackson; "The pelagic eggs and early larval stages of the black drum from Chesapeake Bay," by Edwin B. Joseph, William H. Massmann, and John J. Norcross; "Observations on dolphins (Coryphaena sp.) in the central Pacific Ocean," by Brian J. Rothschild; and "Occurrence of the Pacific bonito in coastal Alaskan waters," by Jay C. Quast.

INDIAN OCEAN:

"Kratkie itogi rabot vtoroi Indookeanskoi ekspeditsii AZchERNIRO" (Brief notes on activities of the second expedition of the Azov-Black Sea Marine Fishery Research Institute in the Indian Ocean), by B.S. Solov'ev, article, Okeanologiya, vol. 3, no. 5, 1963, pp. 936-938, illus., printed. Okeanologiya, Akademia Nauk SSSR, Moscow, U.S.S.R.

Oceanographic Stations Taken in the Indian Ocean by U.S.C.G.C. EASTWIND (WAGB-279) in 1961, by Willis L. Tressler, N.O.O. Tr. 141, 84 pp., printed, July 1963, 75 cents. Naval Oceanographic Office, Washington 25, D. C.

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North-East Atlantic Fisheries Commission, Report of the First Meeting, September 1963, 16 pp., processed in French and English, 1964. North-East Atlantic Fisheries Commission, Rm. 617, East Block, Whitehall Pl., London SW1, England. Contains a report of the proceedings of the first meeting of the newly formed North-East Atlantic Fisheries Commission, London, September 18-20, 1963. Commissioners were present from all Contracting States: Belgium, Denmark, Federal Republic of Germany, France, Iceland, Ireland, Netherlands, Norway, Poland, Portugal, Spain, Sweden, U.S.S.R., and the United Kingdom. The Commission elected officers, adopted Rules of Procedure, appointed an Infractions Committee and a Finance Committee, approved a budget for the current financial year, and established Regional Committees for each of the three regions into which the Convention area is divided. The Commission made plans to hold its second meeting in The Hague, May 12, 1964.

Proces-Verbal de la Reunion, 1963 (Report on the 1963 Meeting), 108 pp., illus., processed, 1964. Conseil International pour l'Exploration de la Mer (I.C.E.S.), Charlottenlund Slot, Charlottenlund, Denmark. Contains information on the 51st Meeting of the Council at Madrid, September-October 1963. Report gives lists of participants and committees; agenda, general meetings, resolutions passed; budget for 1963/1964; and recommendations of consultative committee. In addition, included are the reports of the various committees: Editorial; District Northern Seas; Near Northern Seas; Baltic-Belt Seas; Comité Atlantique; Comparative Fishing (and appendix, "Report of Symposium on the Measurement of Fish Stocks"); Gadoid Fish; Herring (and appendix, "Interim Report of the Working Group on the Assessment of Herring Fisheries in Near Northern Seas"); Comité de la Sardine; Salmon and Trout; Shellfish; Statistical; and others.

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Balik ve Balikcilik (Fish and Fishery), vol. 12, no. 5, 1964, 35 pp., illus., printed in Turkish with English table of contents. Et ve Balik Kurumu G. M., Balikcilik Mudurlugu, Besiktas, Istanbul, Turkey. Contains, among others, these articles: "The Sponge (Part IV);" and "Basic researches on the development of fishery in Turkish waters, lakes, and dams (Part IV)."

Foreign Trade Regulations of Turkey, OBR 64-52, 8 pp., printed, May 1964, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.) The report discusses trade policy, import tariff system, sales and other internal taxes, documentation and fees, and labeling and marking requirements. Also covers special customs provisions, nontariff import controls, the country's export controls, United States foreign trade controls, and Government representation between the two countries.

ULTRAVIOLET RADIATION:
Ultraviolet Irradiation of Circulating Refrigerated Fish Storage Brines, by J. W. Boyd and B. A. Southcott, Reprint No. 760, 7 pp., illus., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 21, no. 1, 1964, pp. 37-43.) Queen's Printer and Controller of Stationery, Ottawa, Canada. Irradiation of refrigerated brines with ultraviolet radiation was effective in controlling bacterial development in the brine during the post-mortem storage of lingcod (Ophiodon elongatus) and sockeye salmon (Oncorhynchus nerka). The bacteriological and organoleptic quality of the fish was not improved by continuous or intermittent exposure of brines to ultraviolet radiation. Irradiation of highly contaminated turbid brines resulted in the killing of a large percentage of the initial bacterial population. Intermittent or continuous irradiation of brines produced off-odors in the brine and in the stored fish. Discoloration developed in the irradiated brine and on exposed surfaces of the stored fish.

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pelagic fisheries. Presents a number of statistical tables showing fishing effort and cod catches from the North Sea in 1961/62; fishing effort and cod and haddock catches landed by British vessels from Faroes, 1961/62; herring fishery, catch per unit of effort; catch data for the sprat fishery; and other similar data.

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U.S.S.R.
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VIET-NAM:
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"The movements of walleyes tagged as yearlings in Lake Erie," by David R. Wolfert, article, Transactions of the American Fisheries Society, vol. 92, no. 4, 1963, pp. 414-420, printed. American Fisheries Society, 1404 New York Ave., NW. Washington, D.C. 20005.

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Fisheries Research Papers, vol. 2, no. 3, March 1964, 102 pp., illus., printed. Washington Department of Fisheries, Rm. 115, General Administration Bldg., Olympia, Wash. Contains, these articles: "The distribution, size, time and current preferences of seaward migrant chinook salmon in the Columbia and Snake Rivers," by Edward M. Mains and John M. Smith; "The relationship of age to length in Puget Sound resident chinook salmon," by J. E. Lasater and Frank Haw; "Maturation, gestation, and birth of rockfish (Sebastodes) from Washington and adjacent waters," by Allan C. Delacy, Charles R. Hitz, and Robert L. Dryfoos; "Notable migrations of sablefish tagged in Puget Sound," by Nicholas Pasquale; and "Growth and ring formation of Washington razor clams," by Herb C. Tegelberg.

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Is the Sea Inexhaustible?, by Percy Viosca, Jr., 7 pp., printed. Louisiana Wild Life and Fisheries Commission, Wild Life and Fisheries Bldg., 400 Royal St., New Orleans, La. 70130.

WEST AFRICA:
Problemes et perspectives de l'organisation des economies de peche maritime dans les etats de l'Afrique occidentale en 1962 (Problems and Observations of the Economic Organization of Marine Fisheries in West African Countries, 1962), by F. Doumenge, 66 pp., illus., printed in French, 1963. (Reprinted from Bulletin de la Section de Geographie, vol. 75, 1962, pp. 219-284.) Section de Geographie, Comité des Trayaux Historiques et Scientifiques, Ministère de l'Education Nationale, Paris, France.

WHALE-MEAT MEAL:
"Whale meat meal," by G. Ahman, article, Vara Palsdjur, vol. 33, 1962, pp. 97-98, printed in Swedish. Sverigas Palsdjur Suppfodares Rikssorbund, Porsgaten 4, Stockholm, Sweden.

WHALES:
"A Review of Japanese whale marking in the North Pacific to the end of 1962, with some information on marking in the Antarctic," by Hideo Omura and Seiji Ohsumi, article, Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette), vol. 53, no. 4, April 1964, pp. 90, 92-112, illus., printed. Hvalfangerforeningen, Sandefjord, Norway. Reviews Japanese whale making in the North Pacific since 1949, and in the Antarctic during the 1955/56-1961/62 seasons. Includes several statistical tables showing number of whales marked, recovery of marks, and recapture of whales.

WORLD PRODUCTION:
"Marine fish production: A world-wide view," by C. P. Idyll, article, Proceedings of the International Congress of Zoology, vol. 16, no. 4, 1963, pp. 330-335, printed. Secretary, Permanent Committee of International Zoological Congresses, 105 Blvd. Raspail, Paris 6, France.

SAVORY SALMON SALAD

Canned salmon makes balancing the budget bearable and feeding the family fun during summer months. For the busy homemaker, U. S. Bureau of Commercial Fisheries Test Kitchen economists have developed several serving tips with an easy-to-do Savory Salmon Salad. Generous portions of this salmon salad heaped on crusty hard rolls or buns will fill the bill with eager eaters. Crisp garden-fresh vegetables also add eye appeal.

Stuffed tomatoes take on new interest when cut horizontally and topped with Savory Salmon Salad or cut vertically into a fan shape and filled with this protein-rich summer delight.

Savory Salmon Salad

1 can (1 pound) salmon

1 cup chopped celery

2 hard-cooked eggs, chopped

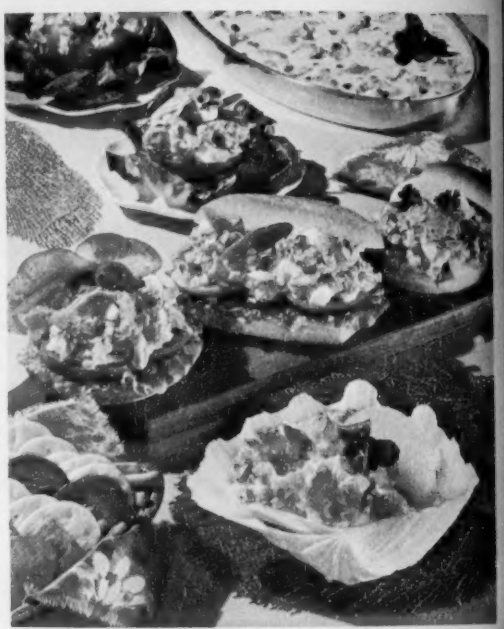
½ cup mayonnaise or salad dressing

2 tablespoons chopped onion

2 tablespoons chopped sweet pickle or drained pickle relish

Lettuce

Drain and flake salmon. Combine all ingredients except lettuce. Serve on lettuce. Serves 6.



Right foreground, Salmon Pineapple Dip; center, Savory Salmon Salad on rolls or buns; left background, tomatoes topped with Savory Salmon Salad; upper left background, Salmon a La King.

Take a Can of Salmon is the title of a colorful recipe booklet with imaginative ways to serve salmon; offered free by the Canned Salmon Institute in cooperation with the U. S. Bureau of Commercial Fisheries. For other interesting salmon recipes, write to the Institute for a copy of the booklet.

Imon
ith
King.